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EDITORIAL

Medical Documentation- An Ignored Aspect in Patient Care

Ishtiaq Ahmed

The medical record is the wellspring of data for countless decisions regarding patient care from doctors, paramedical and administrative staff. Even though, during recent years the ancillary activities like audit, research, legal etc which depend on the medical record have received most of the attention. The most frequent problem encountered by administrative and medical authorities is probably as old as the concept of the medical records itself i.e. its completion in time and in accurate manner. An inaccurate or incomplete medical record reflects that the patient care was incomplete. Medical record which contains gaps depicts poor clinical care, demonstrate non-compliance with institutional policies and can be used to support allegations of negligence or fraud. Moreover, an incomplete patients clinical documentation can leads to legal actions, can results in loosing job, contribute to imprecise quality and care information, leading to lost revenue/reimbursement to institution or physician, inappropriate billing and leading to charges of fraud. In addition, incomplete or improper documentation interfere with research, data analysis, patient-related studies and most likely compromises safe patient care.[1,2] That's why every health care provider institution should ensure timely, precise and complete clinical documentation of all patients at any cost.

Keeping in view all this, the proper documentation has become an integral part of patient management and it has evolved into a science of itself. This is the only mode for clinician to prove that a proper treatment was carried out. There is a strong consensus that properly maintained medical record is of immense help in the scientific evaluation and analysis in patient management issues. Its significance for clinicians and medical establishments is for three important reasons. Firstly, it will help them in the scientific evaluation of patient's profile, treatment outcome analysis, and in planning the treatment protocols. Secondly, it is also helpful in planning institutional or governmental strategies for future medical care. In addition, it is also used to inquire the issue of alleged medical negligence during treatment because the legal system relies mainly on documentary evidence. In these scenarios, the documentation is the most important evidence which decide the sentencing or acquittal of the doctor.[2,3,4,5]

It is disheartening to observe that in spite of knowing the significance of proper medical record keeping, this matter is still in a nascent phase in our country. It is wise to remember that “Poor records mean poor defense, no records mean no defense”.[3] Abernethy et al after reviewing the documents has observed that insufficient data availability has hindered the quality assessment. Of the all eligible patients for analysis, only 12.22% patients can be included in the full analysis. They observed that the sex was un identified in 17%, missing data on race or ethnicity in 26%, confirmed diagnosis in 86%, only 38% provided TNM stage, missing histo-pathology in 34% and up to 10% of records did not revealed dates of administration of chemotherapy to the patients. After switching to electronic medical record keeping the reporting has improved significantly but documentation problems persisted. Overall, they concluded that the records containing data sufficient to evaluate conformance to the colorectal cancer metrics, conformance was low as 50% to 70%.[6] Medical records comprises of a variety of information's from patient's history, clinical findings, investigations, treatment planned, pre and post-operative care, operation notes, daily progress notes of a patient, diagnosis, discharge summary and follow up plan etc which can be used for varied evaluations. For example, in case of a surgery, a properly obtained consent will go a long way in proving that the surgical procedures were carried out with the patient's concurrence. Similarly, meticulous or properly endorsed operation notes can protect a surgeon in case of alleged negligence claims. It needs to be the concerted effort of all

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members of team who are involved in patient care in keeping the proper medical record. In this regard, the doctor is the prime person to oversee this documentation process and is primarily responsible for patient's history, clinical examination, investigation plan, treatment prescribed, operation details, consent forms, referral notes, discharge summary and medical certificates. Other than this, proper recording of nursing care, laboratory data, diagnostic evaluations reports, record of pharmacy and billing processes is also crucial which needs to be maintained by paramedical or administrative staff. In order to maintain proper hospital record, doctor, paramedical and nursing staff should be trained properly.[2]

The medical facilities in Pakistan range from smaller clinics to large hospitals and from private sector to public sector medical facilities. Proper medical record keeping is a separate and specialized domain in some of the public sector, teaching and corporate hospitals of urban setup which are having dedicated medical records officers capable of handling these documents. However, it is yet to develop into a proper record keeping process in majority of hospitals and clinics that provide medical facilities to a large section of the people in Pakistan. To conclude, when documentation is complete and accurate in all domains, it works wonders at telling a patient's story and can even improve patient care. To achieve this, the documentation in the medical record needs to be complete and accurate to facilitate effective continuum of care."

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ORIGINAL ARTICLE

A Journey from Lap-Assisted Vaginal Hysterectomy (LAVH) to Total Laparoscopic Hysterectomy (TLH)

Muhammad Ishaque Khan[1], Akbar Hussain Mujahid[2], Musrat Akhter[3], Alina Saeed[4], Faiza Ishaque[5]

ABSTRACT

Objective: Purpose of the study was to determine the challenges, complications and outcome of laparoscopic hysterectomy (LAVH & TLH).

Study Design: Case series study.

Place and Duration of Study: The study was conducted in Civil Hospital Bahawalpur from 1st October 2016 to 30th September 2017.

Materials and Methods: Patient presenting with DUB (Dysfunctional Uterine Bleeding) and small fibroid were included. Parameters studied were duration of surgery, complications, conversion to open, patient satisfaction and hospital stay. Data was collected on performa and shifted to SPSS version 20.

Results: Out of 11 patients included, 3 patient underwent Lap-assisted vaginal hysterectomy and in 8 patient TLH was performed. One patient was converted to open due to uncontrolled bleeding. One patient developed vesico-vaginal fistula. Minor postoperative wound infection (2 Patients) and wound infection (1 Patient) was managed conservatively.

Conclusion: The challenges/complications of TLH are its technique, training, use of gadgetry, unfamiliar anatomy, bleeding and gas leakage. Proper training, use of uterine manipulator, best assisting technique and use of energy devices make outcome acceptable, easy and achievable.

Key Words: *Hysterectomy, Lap-Assisted Vaginal Hysterectomy (LAVH), Total Laparoscopic Hysterectomy (TLH), Uterine Manipulator.*

Introduction

Abdominal hysterectomy is a procedure which is done, when health of the female patient becomes compromised, due to dysfunctional uterine bleeding or symptomatic fibroids.[1] If medical management fails and health is at risk, hysterectomy may be treatment of choice if family of the patient is complete. It needs initial management of pain, anemia and vaginal bleeding. Treatment options are open TAH, partial laparoscopic hysterectomy, Lap assisted vaginal hysterectomy, total laparoscopic hysterectomy, and vaginal hysterectomy.[2] The decision, regarding which operative technique is to be used depends on many factors. The important factors are disease process and extent, experience of the surgeon, availability of multidisciplinary approach, gadgets, size of the fibroid and size of uterus.

The history of vaginal hysterectomy dates back to 120 A.D. The first hysterectomy was claimed by Charles Clay in 1943 in Manchester. Procedures done were without anesthesia and mortality up to 70%.[3] In 1930s Richardson started Total abdominal hysterectomy with acceptable results.[3] First laparoscopic hysterectomy was done in 1988 by Harry Rich in Pennsylvania.[3]

Minimal access laparoscopic surgery has become a normal nowadays in most fields of surgery. Namely Lap-assisted vaginal hysterectomy (LAVH) and Total laparoscopic Hysterectomy (TLH) are mostly performed in different centers. What is difference between LAVH and TLH? In LAVH the fallopian tubes, ovarian vessels, round and broad ligament are ligated and cut laparoscopically. Calpotomy and ligation of uterine vessel is secured trans-vaginally. In TLH all these steps are performed laparoscopically. LAVH is a popular approach as it can be performed with limited experience. Total laparoscopic

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hysterectomy (TLH) has become possible in some centers by use of uterine manipulator, Colpotomizer and energy source (thunder beat, ligasure & bipolar cautery).[4]

The Journey from LAVH to TLH is demanding. It needs training, patience, careful selection of the patients, energy devices and a multidisciplinary approach. Selection of patient i.e. small fibroids, non-hyperemic uterus facilitated to prevent preoperative complication and post-operative minor complications for example blood loss, pain and fever due to infection.

This study will be helpful for the surgeons/ gynecologists committed to advance laparoscopic procedures. Purpose of the study was to determine the challenges, complications and outcome of laparoscopic hysterectomy (LAVH & TLH).

Materials and Methods

This was a case series prospective study. The study was conducted as a joint venture of surgery and gynecological departments of Civil Hospital, Bahawalpur. Duration was from 1st October 2016 to 30th September 2017. A total 11 patients were selected. A non-randomized convenient sampling was done. Selection criteria was patients having Dysfunctional uterine bleeding or symptomatic fibroids measuring up to 7 cm. Patients with comorbidities, previous abdominal surgeries, large fibroids and large sized uterus were excluded.

Data was collected on a predesigned Performa by one of author. The variables included were age, duration of symptom, operative procedures (laparoscopic vaginal assisted hysterectomy or Total laparoscopic hysterectomy), operative details (duration of surgery, energy sources and extra devices used, per-operative complication and conversion), Post-operative details (complications and hospital stay) and patient satisfaction. This data was shifted to SPSS version 20 for statistical analysis.

Preoperative data analyzed to conclude what is common age, presenting symptom and reason to do the surgery in our institute? The selection of operative procedure LAVH & TLH was dependent on improvement in expertise, size of the fibroid, anatomical difficulties and availability of energy sources. Mean hospital stay was noted in each patient. Post-operative complications were noted at each follow up. Patient satisfaction level was noted. Also the details of post-operative complication management analyzed. These variables are good guide for success of surgery.

Consent was signed by the patient after sufficient details of procedures and their ethical rights were discussed. Anonymity was observed in all cases.

A workshop was arranged with hands on training. All surgical procedures were performed by the same surgeons in both surgical and gynecological departments. Position of the patient was dorsal lithotomy with pneumoboots. Three ports used were umbilical 10 mm for camera, 10mm port on right flank at the same level and 5 mm port in left flank. The cuffed nob of uterine manipulator was inserted in cervical canal and cuff inflated. The Colpotomizer was moved forward until it fits on the cervix. The formal inspection of abdomen and pelvis was done. Dissection was started by cutting fallopian tubes, ovarian vessels, broad and round ligament with ultrasonic dissector after coagulation with bipolar. Two leafs of peritoneum were dissected until uterine vessels was visible. Vessels were ligated by extra corporeal knots and cut by ultrasonic dissector. Bladder was pushed with peritoneum. Now Colpotomizer can be felt and Calpotomy was done with hook. Uterus was removed from vagina. And cuff closed laparoscopically or vaginally. The uterine manipulator used was made locally (fig 1).

Fig 1: Uterine Manipulator with Colpotomizer

Uterine manipulator with colpotomizer made at Civil Hospital Bahawalpur. How it is used can be seen by visiting (https://youtu.be/8AuKsq-wLHs).

Results

During study period 11 patients fulfilled criteria and were included in the study. Age range was 35-60

years & mean age was 48 years. All patients presented with per vaginal bleeding refractory to medical treatment. Lower abdominal pain was in three patients. Four patients were severely anemic having hemoglobin level less than 7 gm. /dl. Seven patients presented with DUB, while 4 patients presented with fibroids 2-5 cm.

In 3 patients LAVH was done and in 8 patients TLH was done. LAVH was done in patient having bigger fibroid (more than 5 Cm) and difficult to deal by TLH. In patients having smaller fibroid (less than 5 cm) TLH was done. However in 2 out of 8 patients undergone TLH bleeding was controlled by vaginal approach. One patient was converted to open surgery due to uncontrolled bleeding. Duration of surgery was 4 hours and 30 minutes; which improved to 3 hours. Average time for surgery was 3 hours and 30 minutes. We used of different energy sources. In 7 patients thunder beat and in 4 patients ultrasonic dissector & bipolar cautery was used. A Uterine manipulator with colpotomizer was used in all patients undergone TLH.

Post-operative course was uneventful in 7 patients. Early complications in 1 patient was portside infection & in two patients were mild P/V bleeding which were managed conservatively. One patient developed vesico-vaginal fistula repair was done after three months (table I). Intravenous antibiotic prophylaxis with ceftriaxone 1 gram was administered at the time of induction of anesthesia & post operatively for 72 hours. Hospital stay was 3-7 days postoperatively. Foley's catheter was left for 1 week. First follow up was after 1 week, later after 15 days and then monthly for 3 months. Eight patients were well satisfied while 2 patients were equivocal and one patient was unsatisfied with this modality of treatment.

Table I: Post-operative course of TLH at Civil Hospital

No	Detail	Number	%age
1	Uneventful	7	63.64 %
2	Post-operative bleeding (mild)	2	18.18 %
3	Wound infection	1	9.09 %
4	Vesico- vaginal fistula	1	9.09 %
5	Peroperative Bleeding (Converted to open)	1	9.09 %

Discussion

The current study highlights different challenges and complication of laparoscopic Hysterectomy and their practical solutions. Total laparoscopic hysterectomy is defined by laparoscopic ligation of Uterine/ovarian vessels with removal of uterus, vaginally or abdominally with closure of vaginal cuff.[5]During this study period some important facts were understood. Multidisciplinary approach by involvement of surgeon, gynecologist and urologist had made TLH easy and doable. It is worth mentioning that TLH is different in many aspects from other modalities. Practical problems, Logistics (energy sources, gadgetry), pelvic anatomy, learning curve[6], operative time[7] and expertise are different from other type of surgery.

Surgery in our cases was done for DUB and small fibroids. There are studies in which TLH done for benign and malignant disease.[8] Some surgeons did LAVH in big fibroids and difficult anatomy but in routine they did TLH.[9] For case selection history, clinical examination, USG, and special cases CT scan was used as diagnostic tool.[10]

Uterine manipulator & energy sources (thunder beat (Olympus), bipolar and harmonic (Ethicon)) has key role in total laparoscopic hysterectomy. To get familiarity with energy devices we used thunder beat and bipolar for other procedures initially. We started with laparoscopic assisted vaginal hysterectomy (LAVH) due to larger fibroid unfamiliarity with anatomy and time factor but with passage of time we shifted to total laparoscopic hysterectomy (TLH).

Authors did not find any research in which energy devices are not used. Surgeons usually use bipolar energy source but in difficult anatomy harmonic/ thunder beat. They also used bipolar before harmonic.[11] We in our setup started with thunder beat and extra corporeal knotting for uterine vessels. But in later cases we used both bipolar and harmonic according to anatomy and size of the fibroid. In most cases associated extra corporeal knots were applied. For gas leakage we used strategy used by RK Mishra by placing gauze pack and inflated gloves initially. Later we used inflated cuff. Different type of vaginal manipulator are used by different surgeons. Initially we used fan liver retractor to manipulate uterus per vaginum. A uterine manipulator was devised locally fig 1 (based on RUMI-2 manipulator) and used. The benefits are visualization of pelvis anatomy, minimal

blood loss, dynamic access to pelvic structures, uterine vessels and vagina due to access on many angles.

Vault closure can be done laparoscopically or per vaginally. In a case series study by Gimbel and Zobbe cuff closure was done laparoscopically but in a few cases where tissue edema was moderate, per vaginal cuff closure was done.[12] We in our first 9 cases did per vaginal cuff closure but in succeeding cases cuff closed laparoscopically. Per-operative detail can be a good guide of improvement in expertise. The duration of surgery can never supersede the safety but it can be clue to the improvement in procedures and gadgets. Different studies revealed that time of procedure was 1 hours and 30 minutes to 3 hours.[13] Time for surgery in our study was noted to be from 3 hours to 4 hours and 30 minutes.

In most of the advance laparoscopic centers patient is discharged next day if patient is vitally stable. Patient remains catheterized for 4-7 days and is first follow up catheter is removed. Next follow up is done in fortnightly then monthly for three months. We also used the same policy. Satisfaction level is almost the same when compared with studies of other authors. In most studies 30 mg ketorolac intravenous at the end of the procedure given and four doses after that. For postoperative pain management we use diclofenac suppositories at induction, injection Tramadol I/V and inj. Lignocaine 1% at port site at the end of the procedure. Pain management was excellent in most of cases.

Authors find some limitation in current study. Firstly it is not study of single method or technique. Secondly the practical aspects are highlighted without much stress on statistical aspects. Thirdly number of patients is less due to time constraint and heavy workload.

Authors want to share few practice points and suggestion:

1. A training workshop with hands on practice must be mandatory before TLH is started.
2. Vaginal manipulator and energy sources has key role.
3. Patient safety is priority. So never hesitate to convert in case of any problem.
4. Don't do surgery for big fibroid or patients with adhesions in early phase.
5. A multiple discipline involvement makes the procedure safe and easy.

Conclusion

TLH is a technically demanding procedure. There are challenges regarding the training, use of gadgetry, unfamiliar anatomy, bleeding and gas leakage. Proper training, use of uterine manipulator, best assisting technique and use of energy devices make it easy and achievable.

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ORIGINAL ARTICLE

The Rationality of Mini-Cholecystectomy: A Study of 143 Cases at Pak Red Crescent Teaching Hospital

Abid Hussain[1], Aqeel Ahmad[2], Kishwar Naheed[3]

ABSTRACT

Objective: The study was conducted to assess the feasibility, safety, effectiveness, and postoperative complications of mini cholecystectomy in our setup.

Study Design: It was a descriptive observational study design.

Place and Duration of Study: This study was conducted from 02nd September 2013 to 30th September 2017 in the department of surgery, Pak Red Crescent Teaching Hospital, affiliated with Pak Red Crescent Medical & Dental College, Lahore.

Materials and Methods: A total of 143 symptomatic patients with cholelithiasis, irrespective of age and sex were included in this by convenient sampling. The data of all patients were collected for age, sex, size of incision, operation time, complication, postoperative hospital stay and analyzed with SPSS version 21.

Results: Out of 143 patients 132 (92.30%) were female and 11 (7.69%) were male. Mean age of the patients was 38±10.38 years. Average incision size was 4±0.65 cm. The mean operating time was 39.12±8.66 minutes. The mean hospital stay was 2 days. Minor post-operative complications like hemorrhage, minor biliary leak and superficial surgical site infection was seen in 7 patients.

Conclusion: The present study shows that mini-cholecystectomy is effective, safe procedure with short operating time, fewer complication, less postoperative stay and it is feasible not only in chronic cholecystitis, but also in an acutely inflamed gallbladder even in empyema.

Key Words: *Cholelithiasis, Cholecystectomy, Gall Bladder, Mini Cholecystectomy.*

Introduction

Cholecystectomy is one of the most common operations performed by departments of general or gastro-intestinal surgery worldwide.[1,2] Conventional cholecystectomy has enjoyed supremacy as treatment of choice for Gallstones almost more than a century.[3] The introduction of laparoscopy in 1990s opened up a new chapter in the surgical history.[4] The procedure progressed at such a speed that it has become the gold standard for management of cholelithiasis.[4] This procedure requires costly equipment[5] and need of additional training of the surgeon, moreover learning curve of this technique is very slow.[6] Due to these factors this procedure has still not replaced the open cholecystectomy in most parts of the third world countries.[4] In early 1990s, it was shown that the conventional large subcostal incision in cholecystectomy could be replaced by a much smaller incision, giving a shorter convalescence. This new modification was named as Mini-cholecystectomy. It was first described by Dubois and Berthelot,[7] and their favorable results were reported at the same time laparoscopic cholecystectomy was introduced into the UK in 1990.[8-10] Most of the previous studies on mini-cholecystectomy done on chronic cholecystitis and excluded acute cholecystitis patients. We decided to analyze the safety and feasibility results of this procedure both in chronic and acute cases. The objective of this study was to assess the feasibility, safety, effectiveness, and postoperative complications of mini cholecystectomy in our setup.

Materials and Methods

This Descriptive observational study was conducted from 02nd September 2013 to 30th September 2017 conducted in the department of surgery, Pak Red Crescent Teaching Hospital, affiliated with Pak Red Crescent Medical & Dental College, Lahore. The study was approved by the ethical review committee

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of our institution. A total of 143 symptomatic patients with cholelithiasis, irrespective of age and sex were included in this by convenient sampling. Written informed consent was taken. Complete blood count, liver function test, viral screening and clotting profile were performed. A routine preoperative abdominal ultrasound scan was performed a day before surgery. Patients with CBD stones were excluded from the study.

All operations were performed under general anesthesia. An equal or less than 5 cm transverse skin crease incision was made, starting from the midline approximately two finger breadths below xiphisternum, extending laterally towards the right subcostal margin. After division of the subcutaneous tissue, anterior rectus sheath, medial part of the rectus muscle and post rectus sheath were divided in turn. The peritoneum was picked up with two clips and divided between them. Gall bladder was located and grasped. In case of distended gall blabber, it was aspirated because the empty gall blabber is easier to grasp for dissection. Abdominal pack was inserted over the omentum and transvers colon and with the help of small deaver retractor it was retracted towards the pelvis. A second deaver retractor was placed over the abdominal pack, medial to the gall bladder and is used to retract segment 4 of the liver upwards, thus exposing the common bile duct and porta hepatis. Any adhesions between Hartmann's pouch, omentum and duodenum was divided carefully under direct vision. The calot's triangle was then dissected and cystic duct and artery was skeletonized and divided between the ligatures. Gall bladder was removed from its bed. The gall bladder bed was checked for hemostasis and for any accessory bile duct. A subhepatic drain was left for 24 hrs. The wound was closed in layers.

Post-operative patients were encouraged to be ambulant and pass urine. All the patients were reassessed in the morning for any post-operative complication. Drain was removed 24 hrs after the operation. Oral fluid was allowed if there was no nausea and on adequate bowel sounds. On second post-operative day soft diet was allowed and patient was discharged. They were called back on the 8th post-operative day for skin suture removal and reviewed fortnightly thereafter for one month. The data of all patients were collected for age, sex, size of incision, operation time, complication, postoperative hospital stay. Data were analysed using SPSS version 21. Descriptive statistics were applied. Frequency and percentage were calculated for categorical variables like gender whereas mean and standard deviation were calculated for numerical variables like age and incision size.

Results

Out of 143 patients, 132 (92.30%) were females and 11 (7.69%) were males. Mean age of the patients was 38 ± 10.38 years. Youngest patient was 16 years old and eldest was 70 years old. The minimum incision size was 3 cm and the maximum size was 5 cm. Average incision size was 4 ± 0.65 cm. The procedure was performed safely in all the cases and none of the patient was converted to conventional cholecystectomy. The mean operating time was 39.12 ± 8.66 minutes. The mean hospital stay was 2 days. During dissection dense Adhesions was found in 13 patients (9.09%) and obscure anatomy was encountered in 9 patients (6.29%), which were handled safely with meticulous dissection. Perioperative findings are given in Table I.

Table I: Perioperative Findings

Perioperative Findings	Patients	%
Acute Cholecystitis	17	11.89
Chronic Cholecystitis	107	74.83
Empyema	12	8.39
Mucocele	7	4.90
Total	143	100.00

Table II: Postoperative Complication

Postoperative Complication	Patients	%
Minor Ooze (Hemorrhage)	3	2.10
Minor Bile Leak	2	1.40
Major Bile Leak	0	0.00
Subhepatic Collection	0	0.00
Gut Injury	0	0.00
Wound Infection	2	1.40
Total	7	4.90

Post-operative complications were seen in 7 patients (4.90%) the details are given in Table II.

Post-operative minor ooze (hemorrhage) from gall bladder bed was stopped spontaneously. Post-operative minor biliary leak was managed conservatively. Wound infection was treated with removal of sutures and wound irrigation along with

antibiotics. Delayed primary closer was done in all these cases.

Discussion

More than 2000 cases of mini laparotomy cholecystectomy have been reported worldwide without any deaths or major common bile duct injuries since the first report in 1982.[8-10] Many authors reported that, it is a safe[3,11] procedure and it can be an alternative to laparoscopic cholecystectomy.[1,12] Mini-cholecystectomy produces ''minimal trauma'' to the patients.[1] It has a similar level of invasiveness to the laparoscopic approach.[13,14] Amount of trauma inflicted by surgeon is directly proportional to the length of incision and division of muscles.[15] Many studies show small transverse incision for gall bladder surgery have proved to be less painful than vertical incision.[16] This reduction of abdominal wall trauma by use of short incision should be accompanied by rapid recovery.[17] We used transverse incision in our study, and in most of the cases the size was less than ≤ 5 cm which is comparable with other studies.[17,18,19] Most of the previous studies on mini-cholecystectomy excluded acute cholecystitis patients. However, we were able to perform the procedure in cases of acute inflammation, mucoceles and empyema. We performed decompression of gallbladder as a routine in all cases to facilitate the visualization and dissection of the triangle of Calot's. The present study shows clearly that mini-cholecystectomy is effective, safe and feasible not only in chronic cholecystitis, but also in an acutely inflamed gallbladder even in empyema. Watanapa P. also found mini-cholecystectomy is an effective surgical procedure for an inflamed gall bladder regardless of the degree and type of inflammation.[20] Operative time was longer at the initial phase of the study but, as we went through the learning curve, the operative time decreased sharply. The average operating time in our study was comparable with local[21] and international data.[17,22,23]

Assalia and colleagues compared mini-lap cholecystectomy with conventional open cholecystectomy and showed no differences with regard to operative time, operative difficulty or complication rate.[24] However, significantly lower analgesic requirements as well as shorter hospital stay were found in the mini-lap cholecystectomy group. Shorter hospital stay also decreases the overall cost of the mini-cholecystectomy when compared with traditional open cholecystectomy.[25,26] Motivated (Encouraging) early mobilization can reduce hospital stay significantly. In our study the average hospital stay was two days which is consistent with local [3,17,27] and international data.[18,19] The wound infection rate in our study was well below with published regional data.[28]

Many studies found, it is a cost-effective procedure.[23,5] It is found more cost-effective than Laparoscopic cholecystectomy[29] and even from conventional open cholecystectomy.[30,31] Nevertheless, mini- cholecystectomy is not appropriate for obese patients, they are more suitable candidates for laparoscopic cholecystectomy.[1]

More effort should be put in to improve the mini-cholecystectomy technique rather than by-passing it especially in centers where laparoscopic cholecystectomy is not available. With this technique we can still offer to the patients of rural population better cosmetically accepted scar, less morbidity and cost-effective procedure.

Conclusion

The present study shows clearly that mini-cholecystectomy is effective, safe procedure with short operating time, fewer complication, less postoperative stay and it is feasible not only in chronic cholecystitis, but also in an acutely inflamed gallbladder even in empyema. It may be recommended as a procedure of choice especially in rural centers, where laparoscopic facilities are not yet available.

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ORIGINAL ARTICLE

Comparative Effects of Cinnamon Extract and Green Tea Against Bisphenol- A Induced Damage in Rat Kidney

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ABSTRACT

Objective: To compare protective efficacy of cinnamon extract and green tea against Bisphenol A induced histological changes in rat kidney.

Study Design: Randomized control trial.

Place and Duration of Study: The study was conducted at animal house of national institute of health sciences, Islamabad from 16th September 2016 to 16th March 2017.

Materials and Methods: Sixty adult male Sprague Dawley rats were placed in 4 confines having 15 rats each. Rats in control group A were given distilled water subcutaneously for 30 days. Rats in experimental group B were given Bisphenol a (BPA) s/c at dose of 30mg/kg/day for 30 days. Rats in group C were given cinnamon (200mg/kg/day) orally along with s/c injection of BPA while group D rats received green tea orally along with s/c BPA injections. Dissection was done after 30 days and right kidney of all rats were dissected out and examined grossly for weight and appearance and histologically for changes in glomerulus and Bowman's capsule. Data was entered and analyzed in SPSS version 22. Mean and standard error was calculated for the quantitative variables. Categorical variables were presented by frequency and percentage.

One way analysis of variance (ANOVA) was applied for the mean comparison of quantitative variables between control and experimental groups. Post hoc tuckey's test was applied for the multiple comparisons among groups.

Chi square test was applied for the comparison of qualitative variables among groups. A *p* value less than 0.05 was considered as a significant value.

Results: Gross and histological parameters were observed in experimental and control groups. Deterioration of kidney structure was greatest in group B as compared to control group. Although both group C and D protected kidney against these changes but group D offered more nephron protection than group C.

Conclusion: BPA adversely affects morphology and microstructure of kidneys by causing oxidative stress and green tea is more beneficial than cinnamon in ameliorating these nephrotoxic effects of BPA.

Key Words: *Bisphenol A, Cinnamomum Zeylanicum, Kidney, Oxidative Stress.*

Introduction

Kidneys, vital organs of human body, remove metabolic wastes of human body and conserve fluids and electrolytes.[1] The acute renal injury is induced by toxins ultimately progresses to chronic kidney disease which is now recognized as a global public health problem.[2] Bisphenol A (BPA), a polymer of polycarbonated plastics, is one of highest volume environmental toxin produced worldwide.[3] Human exposure to BPA occurs mainly through food[4] as it is used inplastic food containers, soft drink bottles, toys, inner lining of metal cans and water supply pipes. Significant BPA levels have been detected in indoor and outdoor air, water , oil and canned food.[5] It is used as color developer in electric invoices and paper towels. Hence absorbed through dermal contact.[6] BPA causes oxidative stress induced tissue damage in the kidneys[7] as it is eliminated by kidneys, therefore, increased level of BPA are observed in CKD.[8]

BPA affect embryology, physiology, histomorphology of various organs of animals and humans.[9]

Antioxidant therapies have nephron protective effect because they cause epithelial cell sparing and

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regeneration and cause apoptosis of my fibroblasts.[10] Cinnamon possess ant oxidative effects which protect kidney from damage caused by diabetes and various toxins. [11] Active components of cinnamon include polyphenols, cinnamic acid and cinnamaldehyde. On the other hand, green tea (Camellia sinensis) also a nephron protective antioxidant derived from plants.[12] Catechins present in green tea include epigallocatechin-3-gallate (EGCG), epicatechin-3-gallate (ECG), epigallocatechin (EGC) and epicatechin (EC). Beneficial effects of green tea include its ant oxidative, anti-inflammatory and ant carcinogenic properties. It is also protective against renal injury.[13] There were no histological studies seen for protection offered by green tea against BPA induced nephrotoxicity. This study has been designed to compare the modulatory effect of cinnamon n green tea consumption on daily basis to counteract the nephrotoxic changes caused by BPA.

Materials and Methods

This study was a randomized control trial. It was conducted in animal house of national institute of health sciences, Islamabad from 16th September 2016 to 16th March 2017. Research took time span of six months before results were achieved. Ethical Review Committee gave approval of synopsis of the study prior to conduction experiment. Research was carried out on sixty adult male rats of Sprague Dawley breed, weighing approximately 250 to 300 grams. Female rats and rats with any conspicuous pathology were rejected.

Simple random sampling technique was used. Under supervision of animal house NIH, rats were kept in 4 confines with a number of 15 rats/confine. A standard laboratory condition indistinguishable to their class with adjusted dietary supplement was given under temperature of 27±3ºC.

Rats were randomly divided by lottery method into 4 groups. (15 animals in each group). Rats in Group A serving as controls were given 1ml refined water subcutaneously. Group B rats were given 30mg/kg/day BPA, subcutaneously. [14] Group Crats were given200mg/kg/day cinnamon aqueous extract [15] via gavage tube 2 hr before daily subcutaneous injection of BPA. Group Drats were given 200mg/kg/day green tea aqueous extract.[16] via gavage tube 2 hr before daily subcutaneous injection of BPA. At the end of 30 days experimental duration, rats were anesthetized, kidneys were exposed through longitudinally cutting in the abdominal region.[11] Right kidneys of all animals were dissected out and observed for gross appearance by comparing them with normal kidneys of control group. Weight and gross appearance of each kidney was noted. Transverse sections of kidney were taken and stained with hematoxylin and eosin. Slides were examined under X4, X10 and X40 power of light microscope. The presence or absence of following qualitative parameters was confirmed by observing four random fields in each slide of kidney.

1. Contracted glomerulus
2. Swollen glomerulus
3. Hemorrhage in glomerulus
4. Ruptured Bowman's capsule

The glomeruli were labeled contracted when they appeared shrunken with increased urinary space as compared to glomeruli of control group.[17] The glomeruli with negligible urinary space were regarded as swollen. SPSS version 22 was used for data analysis. One way analysis of variance (ANOVA) was applied for the mean comparison weight between control and experimental groups. Post hoc turkey's test was applied for the multiple comparisons among groups. Chi square test was applied for the comparison of qualitative variables among groups. A p value less than 0.05 was considered as a significant value.

Results

Mean weight of rat kidney was significantly decreased in group B (rats were given 30mg/kg/day BPA, subcutaneously) as compared to control group A. Green tea administration in group D (rats given 200mg/kg/day green tea aqueous extract) significantly increased weight of kidney as compared to group C (rats given200mg/kg/day cinnamon aqueous extract). Appearance of kidneys was swollen in 80% experimental animals in group B while in group D only 27% kidneys were swollen. The difference of appearance of kidneys was significant between all groups (p=0.00). (Table I) (Fig. 1).

All experimental animals in group B possessed contracted glomeruli while Group C and group D showed contracted glomeruli in 53.3 % and 13.3 % of experimental animals respectively. The difference of contracted appearance of glomeruli was significant

between all the groups (p=0.00). (Table II).

In control group a none of experimental animals showed contracted glomeruli, while in group B contracted glomeruli were present in 100% of experimental animals. Group C and group D showed contracted glomeruli in 53.3 % and 13.3 % of experimental animals respectively. Swollen appearance of glomeruli was neither observed in control group A nor in experimental groups B, C and D. (Table II).

Hemorrhagic glomeruli were present in 86.67% experimental animals. In group B while in group C and D hemorrhage was present in 73.3 % and 26.7% of experimental animals respectively. The difference of hemorrhagic appearance of glomeruli was significant between all groups (p=0.00) (Table II).

Ruptured Bowman's capsule was present in 86.7% of experimental animals in group B. In groups C 46.7% while in group D 20% experimental animals showed ruptured Bowman's capsule. The difference in presence of ruptured capsule was significant between all groups. (Table II).

Table I: Distribution of Kidney Weight (g) and Appearance between Experimental and Control Groups N=60

Groups	Kidney Weight Mean ± SEM	Gross appearance of kidney		
		Normal	Shrunken	Swollen
A	1.701±.0338	15(100%)	0(0%)	0(0%)
B	2.789±.061	3(20%)	0(0%)	12(80%)
C	2.003±.045	5(33%)	0(0%)	10(67%)
D	1.808±.041	11(73%)	0(0%)	4(27%)

Table II: Distribution of Contracted Glomerulus, Swollen Glomerulus, Hemorrhage in Glomerulus and Ruptured Bowman's Capsule between Experimental and Control Groups N=60

Groups	Contracted glomerulus	Swollen glomerulus	Hemorrhage in glomerulus	Ruptured Bowman's capsule
Group A	0(0%)	0	0 (0%)	0 (0%)
Group B	15(100%)	0	13 (86.7%)	13 (86.7%)
Group C	8(53.3%)	0	11 (73.3%)	7 (46.7%)
Group D	2(13.3%)	0	4 (26.7%)	3 (20%)
P value	0.000			

Discussion

Present study was designed to compare the nephron protective efficacy of cinnamon extract and green tea against toxicity caused by BPA by measuring gross as well as microscopic parameters. It was found that nephrotoxicity caused by BPA is ameliorated by both cinnamon and green tea but green tea showed best results in protection of kidney against BPA induced damage.

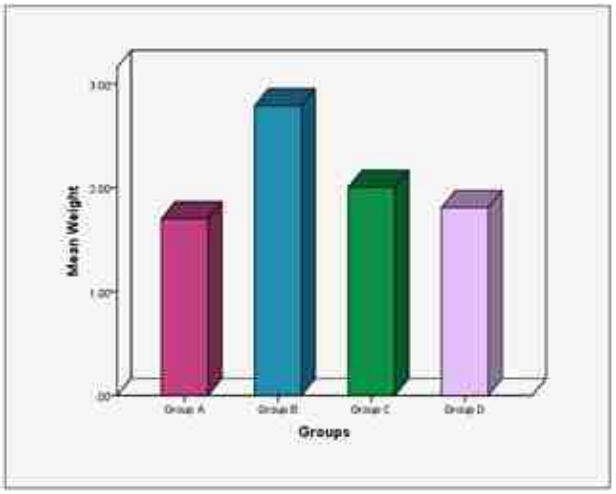

Fig 1: Distribution of Mean Weight between Control and Experimental Groups

BPA leads to increase in kidney weight. Results showed that both cinnamon and green tea reduced kidney weight but comparison of both showed that green tea caused significantly greater reduction in kidney weight than cinnamon.(p=.021).

Increase in kidney weight in group B is indicating underlying change in morphology of kidneys. The reduction in kidney weight observed in present study in group C is accordance with results of Qusti who reported a similar decrease in kidney weight caused by treatment of diabetic rat kidney with cinnamon. Author related this change with the ant oxidative properties.[18] Noori brought to light that cinnamon is unable to decrease weight of kidney in absence of toxic insult.

Green tea polyphenols also act as antioxidants and combat the oxidative stress induced injuries.[19] Decrease in weight of kidney in group D is potentiated by findings of Hama Douche. Author demonstrated that increase in kidney weight caused by lead induced oxidative stress shows a relative decrease after treatment with green tea.[20] Green tea polyphenols reduced the weight of diabetic rat kidney significantly along with reduction in serum creatinine and MDA levels.[21]

Improvement in renal parameters in both groups C

and D along with maximum improvement in green tea group D is also supported by a study conducted by Hasanein. Author compared the affects of green tea cinnamon and black tea on renal function tests in obese diabetic rats.

The kidney dysfunction associated with diabetic rats was found to be linked with oxidative damage caused by diabetes. Both cinnamon and green tea exerted ant oxidative effects because of presence of polyphenols but RFTs improved more in green tea group.[22] Author did not focus the histological features of kidney in green tea and cinnamon treated groups.

Review of literature shows most studies on BPA and antioxidants have not focused on appearance of kidneys. Study conducted by Tan support our results of swollen kidneys in group B.[23] We were unable to find effects of cinnamon and green tea on gross appearance of kidneys in literature.

Hence all above literature supports our findings of maximum improvement in renal parameters with green tea as compared to cinnamon.

Structure of glomeruli was observed in four different fields of vision and all the glomeruli in group B were found to be contracted. Group D showed significant improvement in this parameter than group C.

Improvement in morphological appearance of glomeruli in group C in present study is supported by work of Morgan who showed glomerular congestion and hyper cellularity caused by BPA showed improvement with cinnamon administration.[15] This can be explained by presence of polyphenols in cinnamon.[24] Qusti reported that diabetes causes damage to renal corpuscle shown by shrunken glomeruli which become close to normal appearing glomeruli histologically after treatment with cinnamon.[18] But present study proved that green tea causes more improvement in above mentioned histology of glomerulus than cinnamon.

Sardana noticed that degeneration in glomerular wall caused by gentamycin improved with catechins. He explained that catechins reduce NADPH oxidase activity. Hence they reduce oxidative stress.[25] Various studies support improved glomerular histology with green tea in present study.[26] Yokozawa showed that disturbed glomerular morphology in diabetic kidney restored to normal with green tea.[21] Hama douche proposed similar positive impact of green tea against nephrotoxicity by lead. Lead causes induction of oxidative stress while epicatechin serve as scavengers of free radicals.[20] Hence all above findings strengthen our results of positive effects of green tea on glomerular histology.

In present study BPA caused rupture of Bowman's capsule. Although both cinnamon and green tea improved this parameter but green tea caused significant improvement in histology of Bowman's capsule than cinnamon.($p=0.00$) Sakr noticed that same degenerative changes in renal corpuscle after cypermethrin treatment along with their improvement with cinnamon administration.[27] These results support our finding of improved capsular histology in group C but improvement was greater in green tea group D. In present study we found that BPA causes nephrotoxic effects in rat kidney. Effects of BPA on human kidney should be explored with reference to its accumulation and excretion by human body.

Conclusion

Bisphenol A causes significant changes in histomorphology of rat kidney by induction of oxidative stress. Present study shows that co administration of cinnamon and green tea along with BPA causes improvement in gross and microstructure of kidneys. Comparison of both shows that green tea provides better nephron protection than cinnamon against BPA toxicity.

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ORIGINAL ARTICLE

Prevalence of Obsessive-Compulsive Symptoms in an Outpatient Sample of Patients with Schizophrenia

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ABSTRACT

Objective: To assess the prevalence of clinically significant obsessive compulsive symptoms (OCS) in an outpatient sample of patients with schizophrenia and investigate the correlates of this association in the study subjects.

Study Design: Descriptive, cross sectional study.

Place and Duration of Study: The study was conducted at the outpatients' clinic of the Department of Psychiatry, Pakistan Railways Teaching Hospital, Rawalpindi from 05th October 2016 to 10th March 2017.

Materials and Methods: Fifty consecutively presenting schizophrenic cases were assessed by Yale-Brown Obsessive Compulsive Scale to determine the presence and severity OCS. Positive and Negative Symptoms Scale was used to study the positive and negative symptoms of schizophrenia and Hamilton Rating Scale for depression was administered to evaluate depressive symptoms. A demographic checklist was used to obtain general information. Data was analyzed by SPSS version 22 and descriptive statistics were employed.

Results: The mean age of the study participants was 31.1 ± 9.9 years, and the mean duration of schizophrenia was 8.8 ± 5.9 years. Forty percent of the patients had significant OCS and 16% had DSM-5 diagnosis of OCD. The overall score on Y-BOCS was significantly correlated with the total score on PANSS, PANSS-Positive score, PANSS-General score, and the total score on HRSD.

Conclusion: More than 1/3 of the sample had OCS and this was significantly correlated with positive psychotic symptoms and overall psychopathology. Moreover, OCS were associated with more depressive symptoms in the schizophrenic subjects studied. These results warrant further investigation of obsessive compulsive comorbidity in schizophrenia.

Key Words: *Dopamine, Obsessive Compulsive Symptoms, Positive and Negative Symptoms Scale, Schizophrenia, Schizo-Obsessive Disorder, Serotonin.*

Introduction

The description of obsessive-compulsive symptoms (OCS) in psychotic disorders was first given more than 80 years ago, yet their true prevalence in schizophrenia is only now being systematically explored.[1] An increasing amount of literature alludes to the fact that OCS may occur in many more patients than initially assumed. Many recently published reports have investigated this issue in both inpatient and outpatient settings and have consistently shown frequent comorbidity of both full blown obsessive compulsive disorder (OCD) and OCS in patients with schizophrenia spectrum disorders.[2] Different studies have reported a wide range in the frequency of OCS/OCD in schizophrenia, varying from 8% to 42%.[3] Data also suggest that the presence of obsessions and compulsions among persons with schizophrenia is of considerable clinical significance and a Turkish study is helpful in assessing the impact on the overall disease trajectory. According to this study by Gulec et al., schizophrenia with OCS may be a specific sub-type which does not have more severe psychotic symptoms, but greater depression and anxiety, and the latter are related to severer impairment in psychosocial functioning.[4] Another study conducted in the USA with a cross-sectional design demonstrated that about 1/3 of patients with schizophrenia or schizoaffective disorder had noteworthy OCS; however, these did not of themselves influence the clinical outcome of the

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patients. In this sample, the OCS began concurrently or after the occurrence of psychotic symptoms in the majority of patients, and further studies were required to delineate the relevance and pathological basis for the co-existence of OCS in non-affective psychoses.[5] While the existing literature is suggestive of high co-occurrence of OCS/OCD in schizophrenia, whether this comorbidity implies the presence of a separate diagnostic entity, i.e. that of schizo-obsessive disorder is an open question. Nonetheless, recent comprehensive meta-analyses have shed light on this relationship and show that OCS are more often encountered in those cases who have long-standing schizophrenia, and that these symptoms negatively affect cognitive and executive functioning in the latter patients.[6]

In the present study, we investigated the rate of OCS and OCD among patients who were primarily diagnosed with schizophrenia. We also examined the relationship of OCS to schizophrenic symptoms to provide a clinical description of OCS in the schizo-obsessive subgroup of chronic schizophrenic patients.

Materials and Methods

The study was descriptive, cross sectional in design and was conducted in the out-patients clinic of the department of psychiatry, Pakistan Railways Teaching Hospital, an affiliate of Islamic International Medical College, Rawalpindi. The study duration was from 05th October 2016 to 10th March 2017. The subjects included 50 patients who had an initial or previous diagnosis of schizophrenia and consecutive, non-probability sampling technique was employed. Prior to the start of the study permission was obtained from the Ethical Review Board of the Islamic International Medical College.

Inclusion criteria were:

I) Diagnosis of schizophrenia according to the criteria of DSM-5,
ii) Ages between 18–65 years,
iii) Giving informed consent, and
iv) Patients who could be evaluated by research scales used in the study, for example having no language barrier.

Exclusion criteria were:

i) Learning disabilities,
ii) Presence of neurological or physical diseases, and
iii) Addiction to substances of abuse.

Diagnosis of schizophrenia was made by history and mental state examination according to DSM-5 and the presence of OCS was ascertained in a similar manner. Obsessions were defined as persistent, repetitive, intrusive and distressing thoughts not related tothe patients' delusions; and compulsions as repetitive goal-directed rituals clinically distinguishable from schizophrenic mannerisms. The type and severity of OCS were assessed with the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), including the symptom check-list. A minimum score of 7 on the Y-BOCS and at least 6-month duration of OCS were required for the diagnosis of clinically significant OCD. The schizophrenic symptoms were assessed with Positive and Negative Symptoms Scale (PANSS) and the depressive symptoms were evaluated by Hamilton Rating Scale for Depression (HRSD). The participants were directly interviewed by a consultant psychiatrist and the psychometric instruments were administered by a team of trained doctors and psychologists. The demographic profile was ascertained by a separate proforma.

This was a descriptive study; the data was parametric in nature and was analyzed with Statistical Package for Social Sciences (SPSS) version 23 for Windows. Descriptive statistics were employed that included percentages of schizophrenic subjects with obsessive-compulsive symptoms. All values were presented as mean ± standard deviation. Pearson's correlation coefficient was used to assess the possible relationship between OCS and schizophrenic symptoms and *p*-value of 0.01 was considered significant.

Results

A total of 50 patients (30 men, 20 women) with a DSM-5 diagnosis of schizophrenia were included in the study (Table I). In entirety, 16 of the patients were first diagnosis schizophrenia and 34 had already received this diagnosis. The mean age of the study participants was 31.1 ± 9.9 years, and the mean duration of schizophrenia was 8.8 ± 5.9 years. The mean number of hospitalizations of the patients was 2.0 ± 1.0. A sum of 20 patients (40%) was found to have OCS and the mean score on the Y-BOCS for these patients was 10.7 ± 5.7. In total, 8 of these subjects (Y-BOCS total score ≥ 7) also met the DSM-5 criteria for OCD. The overall score on Y-BOCS was

significantly correlated with the total score on PANSS, PANSS-Positive score, PANSS-General score, and the total score on HRSD (Table III). The Y-BOCS total score was not significantly correlated with negative-PANSS score, duration of illness, number of hospitalizations and use of typical or atypical antipsychotics.

Table I: Clinical and Demographic Features of Study Participants (n = 50)

Demographic and Disease Characteristics	Schizophrenia Patients
Sex (M/F)	30/20
1st *versus* previously diagnosed	16/34
Age of subjects	31.1 ± 9.9
Duration of illness (years)	8.8 ± 5.9
Number of hospitalizations	2.0 ± 1.0
Typical versus atypical antipsychotics	15/35

Results are expressed as mean ± standard deviation

Table II: Psychometric Scales Scores in Study Subjects

Study subjects	Score
Cases with OCS	n = 20
Cases with OCD (Y-BOCS score ≥ 7)	n = 8
Y-BOCS total score	10.7 ± 5.7
PANSS total	60.5 ± 14.5
PANSS Positive	15.0 ± 5.5
PANSS Negative	12.2 ± 4.8
PANSS General	33.5 ± 9.5
HRSD total score	18.2 ± 10.6

Results are expressed as means ± standard deviation

Table III: Relationship of Y-BOCS to PANSS and HRSD in the Study Subjects

Pearson's values	PANSS total	PANSS positive	PANSS negative	PANNS general	HRSD total
Y-BOCS total	0.369	0.398	0.765	0.452	0.385
Pearson's Correlation co-efficient	0.008	0.003	0.11	0.002	0.007

Statistically significant at 0.01

Discussion

In this study, the prevalence of OCS among cases with schizophrenia seen as outpatients is 40%, while that of full criteria OCD is 16%. Moreover, here obsessive-compulsive symptoms are found significantly correlated to total PANSS scores, PANSS-positive symptoms, and depressive symptoms but are not significantly associated with PANSS-negative symptoms, duration of illness, number of hospitalizations, and type of antipsychotic drug used. This rate is in line with that reported in recently conducted studies, as modern research suggests that the frequency of obsessive-compulsive symptomatology in patients with schizophrenia is between 30 and 60%.[7] This implies the presence of at least two clinically significant OCS in persons suffering from schizophrenia.

A well conducted Indian study in consecutive adult admitted patients showed that 18.5% of the schizophrenic cases had OCD. These patients had higher frequency of OCD in family members, more comorbidity with personality disorders, but comparable clinical profiles with schizophrenic subjects without OCS.[8] Another study carried out in long standing schizophrenia patients reported that OCD and OCS were observed in 14.1% and 51.1% of the cases respectively. In this investigation patients with obsessive compulsive symptomatology had an earlier age of onset and a more severe illness with greater functional impairment.[9] The authors suggested that there were significant differences between the two groups and that patients with OCS represented a specific sub-type of schizophrenia. Another study which was carried out in stable outpatients came up with interesting conclusions. It observed that about 9 % of the sample had DSM-IV OCD, whereas OCS were more highly prevalent. The former group had higher scores on HRSD and positive symptom sub-scale of PANSS, but neuropsychological testing did not reveal more cognitive impairment in clinically stable schizophrenic patients with OCD than their counterparts.[10]

The above mentioned differences in rates of occurrence of OCS/OCD in patients with schizophrenia can be due to a variety reasons. Firstly, the studies were conducted in varied samples, represented by inpatients, outpatients or those transitioning from one status to another. Secondly, the cut-off scores for Y-BOCS employed were discrepant, yielding widely divergent frequencies of OCD. Finally, some studies had a cross-sectional design, while others were prospective in nature. A similar divergence in clinical correlates is also seen which most likely arose from demographic differences in study populations, instruments

applied and study designs. Data indicate that co-existence of OCS is of potential clinical importance and in this respect recent comprehensive reviews and meta-analyses are informative. Accordingly, a study which systematically reviewed the extant literature concluded that the presence of obsessions and compulsions was associated with greater severity of psychosis in schizophrenic subjects, represented by more positive and negative symptoms and psychosocial impairments.[11]

Undoubtedly, OCS occur more frequently than expected in schizophrenia, but the neurobiological basis of this linkage is still not well defined. Neuroimaging studies point to the involvement of same limbic and paralimbic structures, most importantly the prefrontal cortex, basal ganglia and the thalamus. In this regard, the neurotransmitter substrate is also identical with dopaminergic and serotonergic abnormalities being particularly incriminated in the pathogenesis of both disorders. These and other related anomalies may be responsible for very high rates of OCS in schizophrenia spectrum disorders.[12]In future elucidation of cellular and molecular pathophysiologic mechanisms may lead to better insights in this respect and more studies are therefore warranted.

Lastly, there are limitations to this study. The small sample size and the outpatient setting preclude the possibility of a fully representative group of patients. Also, bias in the administration of the psychometric instruments cannot be ruled out. Finally, many patients were new cases of schizophrenia, and studying a more chronic sample may yield different results.

Conclusion

Although this is a small study in an outpatient sample of consecutive schizophrenic subjects, it does demonstrate the very high frequency of OCS in non-affective psychosis. This has important treatment implications, as both psychotic symptoms and OCS must be managed simultaneously for better outcomes. In the initial phases, combination of anti-obsessive drugs like selective serotonin reuptake inhibitors should be used together with anti-psychotic medications, although established guidelines are not helpful in this matter. However, the treating physician must be cognizant of the association between OCS and schizophrenia and use empirically proven treatment modalities in the absence of evidence based recommendations.

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ORIGINAL ARTICLE

Effect of Virtual Reality Training on Dynamic Balance of Chronic Stroke Patients

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ABSTRACT

Objective: This study was conducted to determine the effects of virtual reality training on dynamic balance in chronic stroke patients.

Study Design: Quasi experimental design.

Place and Duration of Study: The study was conducted from 01st July 2015 to 31st December 2015 in the department of physical therapy, Pakistan Railway Hospital Rawalpindi.

Materials and Methods: Eight patients of chronic stroke with balance impairment were included through purposive non-probability sampling. The intervention was provided for 6 weeks including virtual reality training for 10-15 minutes per day, 4 days/ week to all patients. Dynamic Balance was measured using Berg Bbalance Test and mobility was assessed through Timed Up and Go Test. Tinetti performance oriented mobility assessment was used to assess both the mobility and dynamic balance. The pre and post mean was compared through SPSS 21 version.

Results: Mean score of berg balance scale was 35±08 and after 6 weeks of intervention score was 53.33±2.65. Mean score and standard deviation of tinetti performance oriented mobility assessment scores which were initially 12.37±8.21 and after 6 weeks of intervention score was 25±02.09. Mean score and standard deviation of timed up and go scores which was initially; 29.08±15.03 and after 6 weeks of intervention score was 8.96±3.4. Overall improvement was seen in dynamic balance of stroke patient, along with increased confidence in performing activities of daily living.

Conclusion: This study demonstrates improvement in dynamic balance after virtual reality training, indicating that virtual reality can play an important role in rehabilitation of balance impairment in chronic stroke.

Key Words: *Dynamic Balance, Stroke, Virtual Reality Training, Xbox.*

Introduction

The cerebrovascular accident or stroke is neurological condition of sudden onset which leads to focal neurological deficits due to lack of appropriate blood supply to brain[1] The global annual prevalence of stroke is 15 million and one third of them die secondary to stroke. The stroke is the 2nd most common cause of death worldwide and 4th in low income countries.[2] The annual incidence of stroke in Pakistan is 250 per 10,0000.[3] The economic loss and social burden is greater in young stroke population.[4] The stroke disability is directly linked with the loss of balance, gait disturbance, functional loss and increase risk of fall.[5] The negative consequences of impairments include the restricted community participation, lack of activities of daily living and marked restrictive role in the society.[6,7]

The appropriate stroke rehabilitation is progressive, dynamic and goal oriented process which aimed to enable a stroke person to reach optimal functional level.[8] There are multiple approaches designed to enhance the level of independence in stroke patients include Bobath treatment[9] progressive resisted training,[10] Proprioceptive neuromuscular facilitation PNF,[11] constraint induced movement therapy CIMT[12] and task oriented training.[13] These all approaches mainly focus on repetition of activities but there is lack of interesting and encouraging activities for maximum repetitions. But patients find such approaches boring and no incentive in performing such activities.[14]

In recent times a concept of virtual reality training

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through exer-gaming has been introduced for physical rehabilitation of stroke patients.[15] The virtual reality (VR) is a computer generated environment which delivers the sensory gesture and make the person with imaginary objects and incidents are real. In such VR environment patients perform task like walking, moving objects, picking and throwing which feel like real activity.[16] There is positive impact of virtual reality training through exer-gaming with neural plasticity in post stroke patients.[17] The VR training has significant improvement in functional outcome and level of motivation in stroke patient but the just mention in the beginning and then specific equipment is too expensive to use for patients. So there are few commercial video games are available like Xbox are being used for the purpose of stroke rehabilitation.[5] The Xbox with Kinect is effective to enhance the activity level, functional recovery motivation, interest, engagement, repetition and chronic Activity of Daily Life in stroke patients[18] The exer-gaming through X box is effective for physical performance and also have greater positive effect on emotional functions and to promote selective attention.[19] The main issue regarding the motivation of patient towards training is considered in the current study.

The VR training with X box has significant addition in stroke rehabilitation in terms of functional outcome with enhance level of motivation. It can be cost effective regarding financial, time, manpower and in future can be integral part of home based stroke rehabilitation.[20] This study will provide the framework for using VR training and would be an addition to existing literature. The purpose of this study was to determine the effect of additional virtual reality training on dynamic balance in chronic stroke patient.

Materials and Methods

This was quasi interventional pilot study conducted from 01st July to 31st December 2015 in department of physical therapy, Pakistan Railway Hospital Rawalpindi. Eight chronic stroke patients, above 40 year of age, who were able to stand without support for at least 30 seconds were included through purposive sampling technique. The exclusion criteria were cognitive impairment, severe balance loss and vision impairment. The ethical approval was taken from ethical committee of Riphah College of Rehabilitation sciences. The informed consent was taken and the treatment procedure was briefly explained to the patients. The standardized test for balance and mobility including Berg Balance Test (BBT), Timed Up and Go (TUG) and performance oriented mobility test (POMA) were used at baseline, after 02, 04 and 06 weeks. The BBT used for analysis of dynamic balance while TUG is reliable tool for assessment of mobility. The POMA is a valid tool for the assessment of both gait and balance.

Task oriented training included the reaching activities, standing balance, marked gait training, sit to stand practice and in addition to that 10-15minutes virtual reality training through exer-gaming was provided. Virtual reality training was given using Kinect. Virtual training was given for 6 weeks with 4 days per week, 1atand 2nd day of 1st week were orientation session where patient got tutorial about the game, later on with each week difficulty was increased to maintain a challenging environment for patient. The trained therapist assessed the patients and performed the functional tasks. The data was analyzed through SPSS 21 version and the mean and standard deviation was compared. (Table I) The data was compared with pre and post training at baseline and after 02, 04 and 06 week. The mean difference was analyzed for difference at multiple time periods.

Table I: Virtual Reality Training Protocol

Intervention	Game types
1st week	20,000 Water leaks
2nd week	Gold rush
3rd week	River rush
4th week	Funnel cake
5th week	20,000 Water leaks & River rush
6th week	Gold rush & Funnel cake

Results

Eight patients followed intervention for 6 weeks out of which, 7 were males and 1 female. The mean age of the patients was 52.23±6.45 year.

Table II: Descriptive Analyses of Timed UP and GO Test

Timed Up and Go Score	Mean Score (Seconds)	Standard Deviation
Baseline	29.08	15.03
After 2 weeks	21.98	9.93
After 4 weeks	13.36	4.29
After 6 weeks	8.96	3.46

The table II shows mean score and standard deviation of TUG scores (measure level of mobility in seconds) which was initially; 29.0875(±15.036) after 2 weeks improved to be: 21.987(±9.931), then after 4 weeks of intervention TUG score was; 13.362(±4.2), and after 6 weeks of intervention score was 8.966(±3.4).

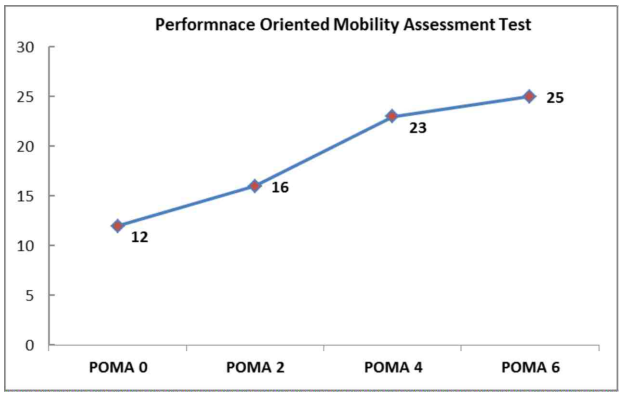

Fig 1: Graphic Representation of POMA Test

The Fig 1 shows an improvement in score of performance oriented mobility assessment scale used to measure dynamic balance and gait. Mean score of POMA initially is 12, which after 2 weeks of intervention improve to 16, further after 4 weeks of intervention Mean score is 23, and reach 25 after 6 weeks of intervention.

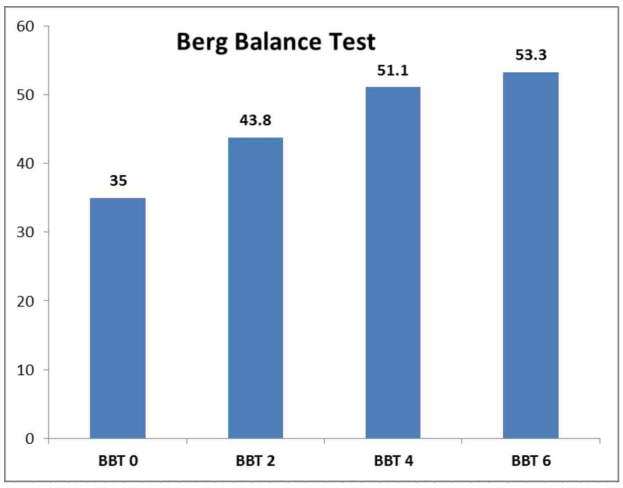

Fig 2: Graphic Representation of Berg Balance Test

The Fig 2 shows an improvement in score of berg balance scale used to measure dynamic balance. Mean score berg balance scale initially is 35, which after 2 weeks of intervention improve to 43.8, further after 4 weeks of intervention Mean score is 51.1, and reach 53.3 after 6 weeks of intervention.

Discussion

The current study reveals that virtual reality training has better outcome regarding balance in stroke patients. The balance training mainly focuses on stability functions like equal weight bearing; attainment of the motor strategies is usually loss during stroke and is needed to perform the fast and safe postural changes. This training can directly improve stability and balance and indirectly improve the safety and gait speed of the chronic stroke population. In this study Improvement in dynamic balance was assessed using berg balance scale and improvement was reported after two weeks of intervention, but significant improvement was observed after 4 weeks of intervention. The study reported low fall risk after 4 weeks and also found berg balance is good tool for assessment of balance.[16] A study conducted by Wagner Henrique Souza Silva et al. also suggested that stroke patients have significant improvement in dynamic balance after virtual reality training. They also recommended that virtual reality have positive effect in addition to conventional therapy to improve functional independence and dynamic balance in chronic stroke patients.[21]

The mobility was assessed through Timed up and Go Test and it was reported that after 06 weeks of training, there was significant improvement in mobility level of stroke patients. Ki Hun Cho elaborated the result of time up and go and found that virtual reality group has significant improvement in mobility level as compare to the traditional training in chronic stroke.[5] Similar studies in literature are suggesting that the additional virtual reality training has better result in stroke improvement. The virtual reality treatment is augmented rehabilitation along with the conventional treatment.[22] The virtual reality training has linked in the formation of neural reorganization and re learning of stroke patients.[23] The clinical improvements reported here confirm the positive relationship between balance function and other aspects of functional mobility and gait previously published. Previous studies also suggest the importance of balance ability besides muscle strength as an important determinant of performance in gait functions in individuals with stroke. A systemic review conducted by Marcela

Cavalcanti Moreira ET all focusing use of VR or the improvement of gait in post-stroke patients demonstrated that the use of VR promotes changes in gait parameters. This also concluded that suggest that VR is a promising method to improve the gait of patients with stroke.[24] Commonly increase in functional strength and balance reduce risk of fall in older adults, virtual reality treatment is therefore beneficial in improving balance and reducing fall risk. Abel Angel Rendon Et all conducted a study to evaluate effect of virtual reality on dynamic balance of older adults by randomized control trial show significant improvement in VRG in the 8-foot Up & Go test and the Activities-specific Balance Confidence Scale. Proving that virtual reality gaming is a useful clinical tool for improving dynamic balance and balance confidence in older adults.[25] Malik reported in case report that virtual reality through exer-gaming has significant effect in enhancing the dynamic balance in chronic stroke.[26]The study design and the sample size was one of major limitation in study. Further research needed to determine and compare the effects of virtual reality training on elderly and stroke patients.

Conclusion

It is concluded that virtual reality training improves dynamic balance, mobility and functional status of chronic patients. It provides a safe environment to the patient to perform real life task without the risk of fall which is an important factor in increasing patient's confidence in mobility.

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ORIGINAL ARTICLE

Histopathological Evaluation of *H. Pylori* Density and its Correlation with Activity, Atrophy and Intestinal Metaplasia

Henna Khalid[1], Alia Zubair[2], Nazma Kiran[3], Aiza Sadia[4]

ABSTRACT

Objective: The objective of this study was to determine the correlation of bacterial density with severity of the degree of neutrophilic infiltrate, atrophy and intestinal metaplasia after analyzing the density of *H. Pylori* semi quantitatively in chronic gastritis patients.

Study Design: The study was a cross sectional correlational study.

Place and Duration of Study: The study was conducted in Army Medical College Rawalpindi from 2nd December 2011 to 1st December 2012.

Materials and Methods: A total of one hundred gastric antral biopsies of *H. Pylori* associated chronic gastritis including all ages and both genders were included in the study. Most of the specimens that were received from the department of Gastroenterology Military Hospital Rawalpindi were fixed in 10% formaline. The tissue was processed in histopathology department. Giemsa stain was used for demonstration of *H. Pylori*. The density of *H. Pylori*, activity, atrophy and intestinal metaplasia were graded using a detailed histopathological classification. SPSS 17 was used to analyze the findings. Relationship between density of *H. Pylori* and other variables was calculated through Spearman's rank correlation test. The findings were considered to be statistically significant if p value was found to be less than 0.05 ($p<0.05$).

Results: An overall significant weak positive correlation was observed between grades of *H. Pylori* density and degree of neutrophilic activity ($r_{s=}$ 0.416). There was significant but weak relationship between grades of *H. Pylori* density and grades of atrophy ($r_{s=}$0.306). Intestinal metaplasia also revealed very weak association with grades of *H. Pylori* density ($r_{s=}$0.287).

Conclusion: In conclusion this study shows the semi quantitative determination of histological parameters and corroborates that, the greater the load of *H. Pylori* infection, the more is the degree of neutrophilic activity, atrophy and intestinal metaplasia.

Key Words: *Atrophy, Chronic Gastritis, Helicobacter Pylori, Intestinal Metaplasia.*

Introduction

Gastritis a clinical condition with upper abdominal discomfort is characterized by inflammation of the gastric mucosa and is the commonest condition observed in biopsies of stomach.[1] Gastritis is classified according to the underlying etiology i.e. *Helicobacter pylori* (*H. Pylori*), autoimmunity, bile reflux, allergic response, NSAIDs and the histopathologic pattern.[2] Infection with *H. Pylori* denotes a key factor in the etiology of several gastrointestinal ailments, ranging from chronic active gastritis to peptic ulceration, gastric MALT lymphoma and gastric adenocarcinoma.[3] Worldwide as a minimum 50% of people are infected, however an exact estimate is difficult, because precise data is unavailable from unindustrialized countries.[4] The *H. Pylori* gastritis prevalence is high in developing Asian countries.[5] Like all developing countries, Pakistan also has high *H. Pylori* prevalence. According to a research carried out in Islamabad Pakistan, 88 percent dyspeptic gastritis patients had *H. Pylori* infection.[6]

Almost half of this world's population is colonized with *H. Pylori*, and majority of infected individuals

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develop chronic inflammation.[7] In long duration disease, intestinal metaplasia and gastric atrophy are observed.[8] Conferring to the western data, intestinal metaplasia and atrophy are premalignant disorders seen in patients with *H. Pylori* chronic gastritis.[9] Simple gastritis may progress and can lead to atrophy, intestinal metaplasia, dysplasia and gastric carcinoma. The fundamental step is in these events is atrophy.[10] Hence, the role of *H. Pylori* in progression of gastric carcinoma seems to be the initiation of atrophy, indicating that research should focus on this event. Moreover, the bacterial density has been correlated with gastric inflammation.[11] A study was carried out at Army Medical College Rawalpindi showing that the density of *H. Pylori* in biopsy proven gastritis is positively correlated with chronic inflammatory infiltrate.[12]

The Sydney System was devised by a group of experts in Sydney, Australia in 1990. The new Updated Sydney System devised in Housten, Texas in 1994 uses none, mild, moderate, severe grades for the histopathological features of chronic gastritis.[13] A detailed histopathological classification can be used to improve assessment and avoid minor degrees of alteration. This study was designed to analyze the density of *H. Pylori* in patients of chronic gastritis and to address whether there was a correlation between bacterial density and severity of degree of neutrophilic infiltrate, atrophy and intestinal metaplasia.

The objectives of the current study were to determine the correlation of bacterial density with severity of the degree of neutrophilic infiltrate, atrophy and intestinal metaplasia after analyzing the density of *H. Pylori* semi quantitatively in chronic gastritis patients.

Materials and Methods

The present cross-sectional correlational study was carried out in the Pathology department of Army Medical College in collaboration with Military Hospital Rawalpindi, Pakistan from 2nd December 2011 to 1st December 2012. One hundred gastric antral biopsies of chronic gastritis patients of all ages and both sexes were included in the study. Gastric biopsies of patients who were receiving or had received *H. Pylori* eradication treatment were not included in the study. Most of the specimens were received from the department of Gastroenterology Military Hospital, Rawalpindi. The specimens were stored in 10% formal saline and were collected in Pathology Lab. Each sample was given a laboratory number.

The related clinical information was taken from laboratory. Data included age, sex, symptoms, history, concomitant medication (intake of antibiotics, proton pump inhibitors, and non-steroidal anti-inflammatory) and results of endoscopic investigations. The collected data was entered in already designed patient's proforma. The tissue was processed in histopathology laboratory and slides were stained with hematoxylin and eosin. Giemsa stain was used for demonstration of *H. Pylori*.

Gastric biopsies of 100 patients diagnosed as *H. Pylori* gastritis were included in the study. The Updated Sydney System uses a scale of 0-3 for scoring the histopathological features of chronic gastritis. We used a detailed histopathological classification in order to improve assessment and avoid minor degrees of alteration.[13] The following histopathological parameters were examined on each slide: density of *H. Pylori*, inflammatory activity, atrophy and intestinal metaplasia. Each category (mild, moderate, and severe) was further subdivided into two, resulting in a score on a scale of 0-6 (none, 0; mild, 1-2; moderate, 3-4; severe, 5-6).[14] This classification also provides numerical data for statistical analysis and has been used in previously in other studies.[15] Before grading biopsy specimens, two pathologists reached a consensus on the scoring of gastritis through interactive sessions using a multiheaded microscope. Subsequently all biopsy specimens were graded. According to this classification, the histopathological parameters were graded as follows.

The *H. Pylori* density was graded as follows:[14]

1) 0: none
2) 1: *H. Pylori* seen only in one place
3) 2: just a few *H. Pylori* seen
4) 3: dispersed *H. Pylori* seen in separate foci
5) 4: numerous *H. Pylori* in separate foci
6) 5: almost complete coverage of gastric surface by layer of *H. Pylori*
7) 6: uninterrupted coverage of gastric surface by a dense layer of *H. Pylori*

The degree of inflammatory activity was categorized

according to neutrophils density in gastric mucosa per biopsy:[14]

1) 0: no crypt involved
2) 1: one crypt is involved
3) 2: two crypts are involved
4) 3: up to 25% crypts are involved
5) 4: 25-50% crypts are involved
6) 5: > 50% crypts are involved
7) 6: all crypts are involved

Atrophy in gastric biopsies was graded as:[14]

1) 0: no change
2) 1: areas where a few gastric crypts are lost or changed into intestinal type metaplastic epithelium
3) 2: small areas in which gastric crypts are lost or changed into intestinal type metaplastic epithelium
4) 3: up to 25% gastric crypts lost or changed into intestinal type metaplastic epithelium
5) 4: 25-50% of gastric glands lost or changed into intestinal type metaplastic epithelium
6) 5: > 50% of gastric crypts lost or changed into intestinal type metaplastic epithelium
7) 6: only a few small areas in which gastric crypts are enduring

The extent of intestinal metaplasia was categorized according to the amount of gastric tissue replaced by metaplastic epithelium:[14]

1) 0: none
2) 1: only one crypt is replaced by metaplastic epithelium
3) 2: 1-4 crypts are replaced by metaplastic epithelium
4) 3: two dispersed foci
5) 4: many foci in one gastric biopsy
6) 5: >50% gastric epithelium is replaced by metaplastic epithelium
7) 6: only a small focal area of epithelium is not replaced by metaplastic epithelium

SPSS 17 was used to analyze the findings. Frequency and percentages represent quantitative variables. Relationship between density of *H. Pylori* and other variables was calculated through Spearman's rank correlation test. The findings were considered to be statistically significant if p value was found to be less than 0.05 ($p<0.05$).

Results

One hundred *H. Pylori* associated chronic gastritis patients were included in the study, out of which 68 were male and 32 cases were females. The median age of the patients was 54.15 years (range; 18-85 years). Figure 1 demonstrates the different grades of *H. Pylori* density observed in 100 biopsies of *H. Pylori* associated chronic gastritis.

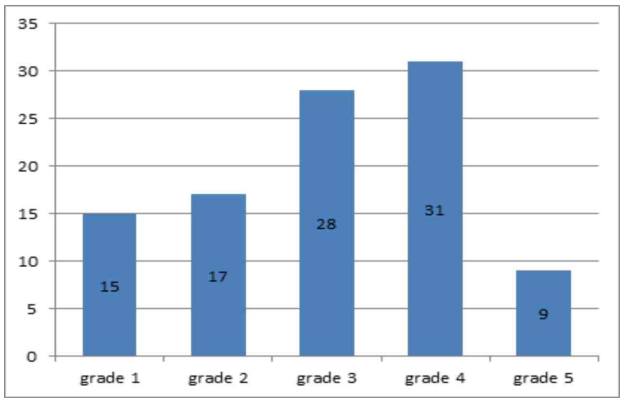

Fig 1: Grades of *H. Pylori* Density in Patients of Chronic gastritis (n=100)

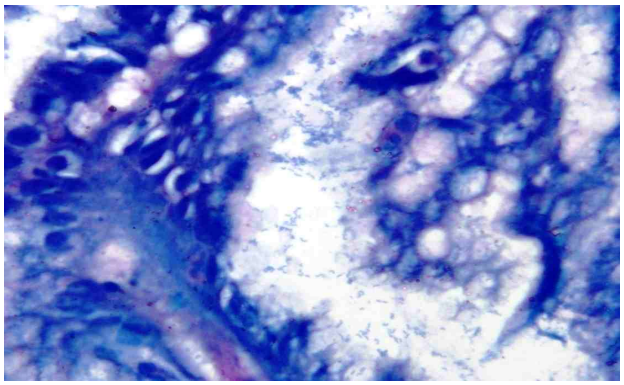

Fig 2: Photomicrograph of Gastric Biopsy Showing Nearly Complete Surface Covered by a Layer of *H. Pylori* (Grade 5 of *H. Pylori* Colonization) (Giemsa stain x 400)

Maximum number of 44 patients revealed no inflammatory activity (grade 0). Table I illustrates number of cases in each grade of *H. Pylori* density, showing different grades of neutrophilic activity.

Table I: Different Grades of Neutrophilic Inflammatory Activity and their Association with Grades of *H. Pylori* Density

Grades of *H. Pylori* density	Grades of inflammatory activity						Total (n)
	grade 0 (n)	grade 1 (n)	grade 2 (n)	grade 3 (n)	grade 4 (n)	grade 5 (n)	
Grade 1	8	2	2	2	0	1	15
Grade 2	13	2	1	1	0	0	17
Grade 3	13	2	3	8	1	1	28
Grade 4	10	0	7	10	4	0	31
Grade 5	0	1	0	4	4	0	9
Total (n)	44	7	13	25	9	2	100

Spearman's rank correlation revealed a significant weak positive ($r_{s=}$ 0.416) relation between grades of *H. Pylori* density and grades of neutrophilic inflammatory activity.

Among 100 patients, maximum number of 49 cases revealed no loss of gastric glands (grade 0 of atrophy). The detail of different grades of atrophy and their association with grades of *H. Pylori* density are evident in table II.

Table II: Grades of Atrophy and their Association with Grades of *H. Pylori* Density

Grades of *H. Pylori* density	Grades of atrophy						Total (n)
	grade 0 (n)	grade 1 (n)	grade 2 (n)	grade 3 (n)	grade 4 (n)	grade 5 (n)	
Grade 1	11	2	2	0	0	0	15
Grade 2	9	3	2	3	0	0	17
Grade 3	12	6	3	6	1	0	28
Grade 4	17	4	4	2	1	3	31
Grade 5	0	1	2	2	0	4	9
Total (n)	49	16	13	13	2	7	100

The statistical analysis done with Spearman's rank correlation suggested a weak positive relation ($r_{s=}$ 0.306) between grades of *H. Pylori* density and grades of atrophy.

Fifty one biopsies included in the study showed different grades of intestinal metaplasia and 49 biopsies revealed no intestinal metaplasia (grade 0). Detail of different grades is shown in table III.

Table III: Grades of Intestinal Metaplasia and their Association with Different Grades of *H. Pylori* Density

Grades of *H. Pylori* density	Grades of intestinal metaplasia						Total (n)
	grade 0 (n)	grade 1 (n)	grade 2 (n)	grade 3 (n)	grade 4 (n)	grade 5 (n)	
Grade 1	11	1	3	0	0	0	15
Grade 2	9	2	2	1	3	0	17
Grade 3	12	4	3	1	8	0	28
Grade 4	17	3	4	1	3	3	31
Grade 5	0	1	2	1	1	4	9
Total (n)	49	11	14	4	15	7	100

Spearman's rank correlation suggested a very weak positive correlation among grades of *H. Pylori* density and grades of intestinal metaplasia ($r_{s=}$0.287).

Discussion

H. Pylori organisms are the most important bacteria causing inflammation and chronic infection of the stomach. A number of studies show ambivalent results in relationship of *H. Pylori* density and degree of activity, atrophy and intestinal metaplasia. In this study we determined the density of *H. Pylori* semi quantitatively and found a weak positive correlation between bacterial density and these pathological findings of chronic gastritis.

In the present study, highest percentage of cases (n=59) was found in moderate grade *H. Pylori* density followed by mild and marked grades. These findings are similar to results of a study done at Mayo hospital.[16] Some authors suggested highest percentages in mild grade[17]while some in marked grade of *H. Pylori* density.[18] Number of factors contribute to these discrepancies including difference in *H. Pylori* strains, sample size and study design.

'Activity' is a variable component of *H. Pylori* linked chronic gastritis. Activity consists of numbers of neutrophils within the lamina propria, intraepithelial location and intraluminal location to form pit abscesses. In current study, the inflammatory activity was found to be 56% with maximum number of patients in moderate grade. In contrast 83% neutrophilic activity was reported in a study done in 2008 in Japan.[19] The present study shows a weak positive association between *H. Pylori* density and activity of chronic gastritis (r_s=0.416) and the results are similar to few other studies which also suggest that the neutrophilic activity shows a direct association with the density of *H. Pylori.*[19,20,21] The possible cause is that *H. Pylori* are an effective source of mediators that induce activation and chemotaxis of neutrophils. The variability of different strains of *H. Pylori* which induces upregulation of CD11b/CD18, chemotaxis of neutrophils along with oxidative burst response in neutrophils.[22] The extent of neutrophil activation and recruitment is determined by various factors like bacterial colonization, virulence, persistence, and the resultant innate and acquired host immune responses.[23]

It is well established fact that *H. Pylori* are involved in development of atrophy and intestinal metaplasia.[24] In our study, there was an increase in grades of the atrophy with the increasing grades of *H. Pylori* density in the gastric mucosa ($r_{s=}$ 0.306). The results are similar to other studies which also show a statistically significant and positive correlation between the intensity of *H pylori* and the degree of atrophy.[25,26,27]

Among the many risk factors, *H. Pylori* infection is considered as the most important risk factor of intestinal metaplasia.[28] The present study showed a statistically significant but very weak relation

between the density of *H. Pylori* and intestinal metaplasia (r_s=0.287). Two other studies also determined a significant correlation between density of *H. Pylori* and degree of intestinal metaplasia.[29,30] In contrast to the results of present study, another study documented statistically significant drop in the rate of *H. Pylori* colonization density with the increase in intestinal metaplasia.[31] The possible explanations are, because intestinal metaplasia is often focal process, *H. Pylori* may stay alive on the gastric epithelium in the surroundings of intestinal metaplasia. Moreover, there is a fact that the experience of the endoscopist affects the detection rate of intestinal metaplasia.[32]

The limitations of present study are that it is performed in a single institution based with limited number of cases, although the patients come from variety of ethnic groups and socioeconomic backgrounds. Large scale multicenter studies may be of help to improve the statistical power of this study.

Conclusion

After semi quantitative determination of histopathological parameters of *H. Pylori* associated chronic gastritis, it is concluded, that, the greater the density of *H. Pylori*, the larger the degrees of neutrophilic activity, intestinal metaplasia and atrophy. Comprehensive histopathological classification can be used in gastric biopsies to improve assessment and avoid minor degrees of alteration.

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ORIGINAL ARTICLE

Ease in Pain and Functional Activities following Caesarean Delivery by Post Natal Exercises (Pilot Study)

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ABSTRACT

Objective: To determine effectiveness of post natal exercises to improve incision pain and functional activities in female following cesarean section.

Study Design: Experimental, Randomized controlled study design.

Place and Duration of Study: The study was conducted in Gynecology and Physiotherapy department of Pakistan Railway Hospital, Rawalpindi from 01st February 2017 to 31st March 2017.

Materials and Methods: Twenty women who had undergone caesarian section after spinal or epidural anesthesia were included in the study with informed consent. Patients having multiple births, patients with controlled anesthesia, with general anesthesia, operative complications and fetal abnormalities were excluded. Subjects were randomly allocated in two groups; one receiving post-natal exercise plan and the other receiving routine nursing care. Intervention included Deep breathing exercise, Inter-digital technique, Coughing technique, Ankle pumps, Leg sliding, Pelvic rolling, Abdominal wall setting exercise and Postural education. Exercises were repeated twice a day for three days post cesarean section. Patients were evaluated for general pain intensity, difficulty in functional activities, time of ambulation and analgesic intake on 1st and 2nd post-operative day. Results were analyzed on IBM SPSS 20 using independent t test.

Results: Mean age of interventional group (n= 10) was 28.10 ± SD 5.30 and 29.60 ± SD 2.54 years for the control group (n = 10). P value for pain was found non - significant (p = 0.152) on 1st post-operative day but showed a significant difference (p = 0.020) on 2nd post-operative day indicating better outcomes for exercise group. Significant p values were observed in exercise group for difficulty in performing activities like turning in bed (p = 0.001), sitting (p = 0.008), standing (p < 0.001) and walking (p < 0.001).

Conclusion: Post Natal exercises improve mobility and reduce pain in females who had undergone caesarian section after spinal or epidural anesthesia.

Key Words: *Caesarean Deliveries, Functional Activities, Physiotherapy.*

Introduction

Numerous studies are to be assessing different problems as a result of delivery either vaginal or caesarean section, but only few studies are found to focus on physiotherapy care in post natal quality of life among females.[1] However recent researches are focusing on physiotherapy plan for postpartum care and suggest physiotherapy as need of hour.[2]

One of the major obstetric procedures that faced high rate controversies for years is caesarean section. Caesarean section became highly popular with its rate being dramatically increased in recent few decades over the world. This increased rate led to raised maternal morbidity and mortality.[3,4]

According to WHO guidelines 2009 no region in the world can cross a set limit of 10-15% of caesarean deliveries.[5] In Pakistan according to the available data institutional deliveries illustrate increased rate of caesarean section. This raised rate of c-section set mothers at high risk of developing future medical complications.[6] Therefore affecting Quality of Life in females after caesarean delivery.[4]

Common cause of acute obstetric pain is caesarean section. Traditionally opioids and non-steroidal anti-inflammatory drugs (NSAIDs) are used for post operative analgesia management but still

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inadequate relief and patient satisfaction is common in many cases.[6] Literature supports the effectiveness of breathing exercises and respiratory physiotherapy to improve pulmonary functions in females having caesarean section under general anesthesia.[7] A recent study by Juliana Schulze Burti and colleagues found exercise protocol optimistically contributed to the reduction of pain and improvement of general well-being.[8] Other non-pharmacological approaches to manage pain after caesarean deliveries include therapeutic acupressure for reduction in pain perception, anxiety, depression and pain.[9] Several studies suggest transcutaneous electrical nerve stimulation to be effective in treating incision pain in early post caesarean period.[10,11]

Females having caesarean section births experience higher intensities of pain while perform activities & during movements in comparison to females having vaginal delivery births. Consequently females having caesarean section exhibit greater functional limitation for specific movements. Moreover this pain and functional limitation was not associated with parity.[9]

As limited literature is available regarding physiotherapy plan and its outcome in post natal care so the current study was conducted to find out effectiveness of post natal exercises to improve incision pain and functional activities in female following cesarean section.

Materials and Methods

A randomized controlled pilot study was conducted on females who had caesarean delivery in gynecological department, Pakistan Railway Hospital in collaboration with physiotherapy department from 01st February 2017 to 31st March 2017. Sample consisted of females who had epidural anesthesia for caesarean section. Patients having multiple births, patient controlled anesthesia, C-Section with general anesthesia, operative complications and females who were identified having any fetal abnormality according to the anomaly scan were excluded from the study. Using purposive sampling techniques 20 female patients were included in the study. Patients falling on the criteria were informed and written consents were taken. Only 2 patients refused to participate and 20 females completed the study. It was an assessor blinded trial. Patients were randomly assigned in both groups according to even and odd dates of C-section. Interventional group (n=10) received physiotherapy session on zero post-operative day and first post-operative day. The control group (n=10) received routine nursing care. Both groups were given routine analgesics for post-operative pain management.

Physical characters recorded include age, height, weight and body mass index. Number of pregnancies, history of past gynae & obstetrical surgeries and complications in gestation were recorded. Time taken for first ambulation after transfer to obstetric ward was calculated. Intensity of pain was recorded using numeric rating scale. Difficulty in functional activity including turning in bed, sitting, standing and walking were marked on numeric rating scale (zero = no pain, 10 = maximum pain). Data was obtained at 1st post-operative day after 1st ambulation and 2nd post-operative day after the physiotherapy session. Patients were observed for adverse effects of physiotherapy but no such effects were reported by the patient.

Interventional group was given post-natal exercises with 10 repetitions of each exercise. These exercises included deep breathing exercise (to improve exchange of gases), Inter-digital technique for chest expansion (to improve circulation and promote exchange of gases), protected Huffing technique (to remove secretions), Ankle pumps (to improve blood circulation and relaxing calf muscles), Leg sliding (to improve circulation), Pelvic rolling and abdominal wall setting exercise (to stimulate intestinal activity, contract abdominal muscles and prevent or control gas pain). Patient was also educated regarding postural adjustments and advised to repeat the exercises twice a day. Control group was given routine nursing care by the nursing staff of the gynae ward and postural education was guided by the physiotherapist.

Statistical analysis was done using IBM SPSS 20. Independent t-test was applied on pain and difficulty in all four functional activities on 1st and 2nd post-operative day separately. Tool used was Numeric Pain Rating Scale. Data was normally distributed according to the test of normality and hence the test of choice was independent-t test.

Results

Female participants included in the study were equally divided in two groups. Mean age for

interventional group was 28.10 ± 5.30 and 29.60 ± 2.54 for the control group. Mean body mass index for the interventional group was 23.84 ± 2.90 and for control group it was 22.07 ± 5.66. Independent t test was applied to assess the difference in the ambulation of groups and was found non-significant with p value of greater than 0.05 (p = 0.230).

Mean Value of pain among both groups is shown in the figure below. As the figure shows that mean value for pain at 1st post-operative day exhibits difference among the two groups but statistical analysis do not show a significant p value (p = 0.152). However significant p value (0.020) was found at 2nd post-operative day.

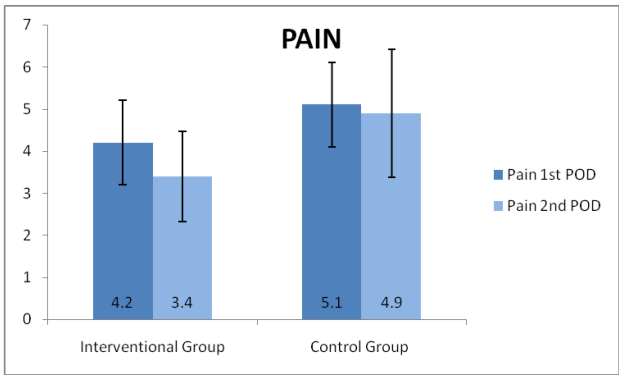

Fig 1: Comparison of Pain (Numeric Pain Rating Scale) at 1st & 2nd Post-Operative Day in both groups

A significant difference was found among both groups regarding reduction in difficulty and pain while performing functional activities. After both sessions given at zero post-operative day and first post-operative day results were significant in interventional group but more obvious results appear at 2nd post-operative day.

Table I: Comparison of Functional Activities at 1st & 2nd Post-Operative Day in Both Groups

Variable	Mean ± SD (Interventional Group)	Mean ± SD (Control Group)	P - Value
Turning in Bed Day 1 Day 2	 6.0 ± 1.4 3.7 ± 0.8	 7.3 ± 1.5 5.1 ± 0.7	 0.073 0.001
Sitting Day 1 Day 2	 6.3 ± 0.8 4.6 ± 0.9	 7.5 ± 1.3 5.9 ± 0.9	 0.030 0.008
Standing Day 1 Day 2	 6.9 ± 0.7 4.1 ± 0.9	 8.3 ± 0.9 6.0 ± 0.8	 0.002 0.000
Walking Day 1 Day 2	 7.2 ± 0.8 4.0 ± 1.1	 8.4 ± 1.1 6.0 ± 0.7	 0.011 0.000

Discussion

Many studies have been conducted to assess the problems associated with cesarean section, but physiotherapy aspect and its effects after caesarean still require attention of the researchers.

The results of this study show that pain after caesarean section can be reduced by physiotherapy including mobility exercises, breathing techniques and postural care. Both interventional and control groups were taking analgesics three times a day and the pain experienced with medication was assessed. Non-significant results were found on 1st post-operative day regarding general pain but on 2nd post-operative day a significant reduction in pain was observed. Similar results were found in a study conducted by Ãlkim ÇÂtak Karakaya et al using transcutaneous electrical nerve stimulation as a part of physiotherapy management along with exercises.[12] Another recent study by Juliana Schulze Burti and colleagues also shows similar result that exercise protocol optimistically contributed to the reduction of pain and improvement of general well-being.[8]

Breathing exercises are found to be helpful in improving circulation and healing thereby inducing relaxation by mild muscular activity in abdominal area.[12] Breathing exercises should be considered while planning physiotherapy exercising for post cesarean patients.

Vermelis and colleagues conducted a study in 2010 on prevalence and predictors of chronic pain after labor and delivery. According to this study rate of chronic low back pain after delivery is more in cesarean section (6-18%) as compared to vaginal deliveries (4-10%).[13] Several techniques are considered to overcome pain after delivery Lena Nilsson-Wikmar et al in their study found that post-partum back pain effects activities related to movements and requires special attention.[14]

Physical therapy is considered to be an important intervention that requires to be initiated in early post natal period to reduce pain and improve mobility status of the patient. Emily Norman, Margaret Sherburn, Richard H. Osborne and Mary P. Galea in their study in 2010 evaluated effectiveness of physiotherapy regimes and health care educational programs on well-being of post natal females. Physiotherapy is found effective not only in

improving well-being scores but also reduces depressive symptoms.[15] In 2004 another study also suggested that specific physiotherapy exercises are helpful in reducing pelvic girdle pain after pregnancy. So physiotherapy is essential part of treatment regarding post natal well-being by reducing pain after delivery especially cesarean section.[16]

Sample size for the current study was small as it was pilot study and tools assessing mobility should also be applied to measure outcomes more precisely. Though findings of this study are limited but contribute to the existing literature. However further studies should be conducted with longer duration of treatment and to design a standard protocol for post cesarean patients to achieve optimal results.

Conclusion

Current study concludes that post natal exercises are effective in improving intensity of pain and functional status in terms of ambulation and ease in movement, in comparison to patients who receive only nursing care.

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ORIGINAL ARTICLE

Leptin Levels in Polycystic Ovarian Syndrome

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ABSTRACT

Objective: To determine the association of serum leptin levels with serum FSH, LH, blood glucose fasting and BMI in young unmarried females with Polycystic Ovarian Syndrome.

Study Design: Descriptive Cross Sectional Study.

Place and Duration of Study: The study was conducted from 15th March 2016 to 15th March 2017 in Gynea and Obs department of Benazir Bhutto Shaheed Hospital, Rawalpindi.

Materials and Methods: A sample of 77 young unmarried females of ages 15-30 years was recruited while obtaining their written consent and divided into four groups using Rotterdam Criteria. These were control (non PCOS) and study group (PCOS) with three subgroups based on their BMI (Lean, Overweight and Obese). Serum Leptin assay was measured using Sandwich-ELISA method. A pre-designed questionnaire was used to collect data from the patients. Data was analyzed in the Statistical Package of version 21.0, IBM SPSS.

Results: No association was found between leptin with FSH and LH in PCOS patients. However, body mass index (BMI) and blood sugar fasting were significantly correlated with leptin in PCOS subjects and controls. Correlation coefficient of leptin vs BSF is 0.488 with a p value of 0.000. Leptin was not significantly different between PCOS and non-PCOS with normal BMI 3637.9 ± 1259.1 vs 3263.4 ± 1461.8 respectively with P value 0.331. In a subgroup analysis of lean, overweight and obese PCOS patients, each category showed different mean serum leptin levels (3637.9 ± 1259.1 vs 4603.3 ± 1223.7 vs 4261.0 ± 1504.1 respectively) with p value 0.015.

Conclusion: Serum leptin has a positive association with BMI and blood glucose fasting in PCOS women. However, it has no relationship with serum FSH and LH in PCOS women. The increase in BMI and BSF is the reason of hyperleptinemia in PCOs.

Key Words: *Blood Sugar Fasting, Body Mass Index, Polycystic Ovarian Syndrome, Serum Leptin.*

Introduction

Polycystic Ovarian Syndrome (PCOS) is an endocrine disorder which has become cosmopolitan in nature. It is taking its toll in both clinical and public health sectors.[1] PCOS affects 1 in 15 women worldwide.[2] 5-10% of females are affected in reproductive age.[3] Prevalence of PCOS is 9.13% amongst South Asian adolescents.[4]

PCOS was first identified around 20th century by two Chicago Gynecologists - Dr. Irving Stein and Michael Leventhal.[5] Stein and Leventhal had found an association of polycystic ovaries with amenorrhea. It turned out to be a landmark study for the reproductive world.[6]

PCOS affects individuals in multiple ways including reproductive repercussions (subfertility, hyperandrogenism and hirsuitism), metabolic derangements (raised insulin, DM and CVD) and psychological health issues (anxiety, depression and deteriorated quality of life).[7]

Leptin is a Greek word stemming from leptos. Leptos means thin. It is a satiety hormone. It is secreted by fat cells and inhibits hunger to regulate energy balance. Leptin consists of 167 amino acid peptide that is secreted in a pulsatile manner. The key role of leptin is monitoring energy homeostasis. This is accomplished by impacting on feeding behavior and energy expenditure.[8]

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Leptin receptors (LepRs) are expressed in two different neurons in arcuate nucleus of hypothalamus. These either repress or arouse feeding. The mutual orchestrated functioning of both kind of neurons help regulate energy balance. Both types are sensitive to leptin and insulin as they have LepRs.[9] Leptin plays an important role in homeostasis by participating in reproductive axis with excitatory effects at hypothalamus and suppressive actions at ovaries.[10]

Our study was planned to estimate the serum leptin level in PCOS among young unmarried females reporting at our hospital. The study was conducted on young girls to find if an early detection of PCOS along with certain parameters can help in alleviation of symptoms. The gap in study is still the controversial relation between leptin and other parameters. The study aims to determine the correlation of serum leptin levels with serum FSH, LH, Blood Glucose fasting and BMI in young females with Polycystic Ovarian Syndrome.

Materials and Methods

This descriptive cross sectional study was conducted in department of Gyne and Obs. Benazir Bhutto Shaheed Hospital, Rawalpindi from 15th March 2016 to 15th March 2017. The target population was all unmarried women who were between 15-30 years of age. We collected responses of 77 cases based on consecutive sampling. Women with adrenal or hypothalamic aberrations, Cushing's syndrome, hypo-or hyperthyroidism, hyperprolactinemia were excluded from the study. Those patients were also excluded from our population who were on a prescription affecting their hormones for at least 3 months prior to study. The females taking any drugs (oral contraceptive pills, insulin sensitizers, steroids, androgenic drug use) or suffering from any medical diseases (diabetes mellitus, thyroid dysfunction, congenital adrenal hyperplasia, Cushing's syndrome) were sidelined from research. Written consent from patients was taken individually.

Out of 77 samples, 63 were diagnosed cases of PCOS and remaining 14 were non-PCOS. The subjects were divided into two groups namely control and study group. Control group (group I) without PCOS comprised of 14 subjects with lean weight. Study group with PCOS was divided into three subgroups. Subgroup II of 15 subjects with lean weight, subgroup III of 30 subjects with overweight and subgroup IV of 18 subjects with obese.

These subgroups were divided by BMI categories. BMI was calculated by dividing weight by height in square meter (kg/m^2). Classification of PCOs and non-PCOs is according to World Health Organization. PCOS comprise of two of three features: 1) oligo- and/or anovulation, 2) clinical and/or biochemical signs of hyperandrogenism, and 3) polycystic ovaries on ultrasonography. This classification is according to World Health Organization.[11] These criteria include exclusion of androgen excess or related disorders before diagnosing it as PCOS.[12]

After an overnight fast, blood samples were taken to be centrifuged at 25,000 revolutions per second for 8 minutes for sera separation which were stored at -20°C for further analysis at Biochemistry Research Laboratory IIMC. All samples were examined for blood glucose fasting (BGF), luteinizing hormone (LH), follicle stimulating hormone (FSH) and serum leptin level. Statistical analysis was done in SPSS version 21.0. We used Kolmogrov Smirnov test to test the normality of quantitative variables, Mann-Whitney U test for comparison of leptin level in PCOs and non-PCOs. Kruskal Wallis test for comparing leptin levels against 3 BMI groups in PCOs. Spearman rho correlation was used to determine correlation between leptin and BGF. P value <0.05 will be considered as significant.

Results

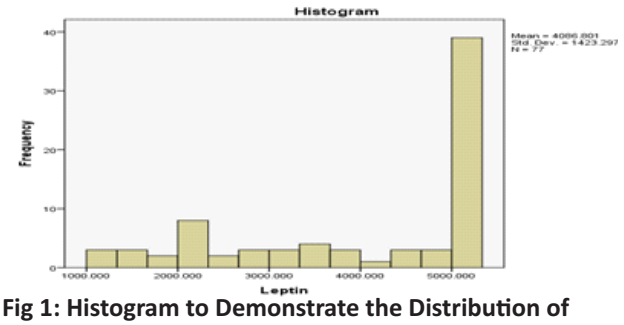

Fig 1: Histogram to Demonstrate the Distribution of Leptin Levels Among Various Groups

A total of 77 patients were included in the study which are distributed in further 4 sub-groups with respect of BMI, Lean (Non-PCOS), Lean (PCOS), over weight (PCOS) and obese (PCOS) with numbers 14 (18.18%), 15 (19.48%), 30 (38.96%) and 18 (23.37%) respectively. Overall age was 26.77±3.81 whereas the age with respect of subgroups I (Lean and Non-

PCOS), II (Lean and PCOS), III (Overweight and PCOS), and IV (obese and PCOS) was 26.79±3.47, 25.6±4.64, 27.27±3.78 and 26.89±3.46. Kolmogrov-Smirnov test shows that the leptin level does not follow normal distribution with p value 0.000. (Fig 1). Hence we use non-parametric tests to test the leptin level within groups.

Table I: Comparison of Leptin Level in Study and Control Group with Normal Weight

Groups	N	Mean ± SD	P value
Control group	14	3263.46 ± 1461.83	0.331
Study group	15	3637.97 ±1259.18	

There was no significant difference in average leptin level between control group (non-PCOS) and study group (PCOS) with p value 0.331 by Mann-Whitney U test (Table 1).

Table II: Serum Leptin Levels in Different BMI Categories of PCOS Women

Study Group	N	Mean ± SD	P value
Subgroup II (Lean weight)	15	3263.46 ±1461.83	0.015
Subgroup III (Overweight)	30	4603.37 ± 1223.73	
Subgroup IV (Obese)	18	4261.05 ± 1504.13	

The Kruskal-Wallis test shows that there was significant difference of average leptin level between subgroups II, III and IV with p value 0.015 (Table 2). The above table shows that the average leptin level changed in different BMI categories. Here we applied Kruskal-Wallis (Non Parametric ANOVA) test to test the hypothesis that "average leptin level of different BMI categories is equal" against the alternative that it is not. The P value 0.015 shows that average leptin level is different in different BMI categories. The difference in mean leptin levels in lean, overweight and obese patients was highly significant. Thus, in PCOs, leptin level is significantly changed in different BMI groups. There is considerable elevation in leptin levels in the PCOS women as compared to controls.

Table III: Correlation of Leptin and other Variables in PCOS Group

Correlation with Leptin	Follicle Stimulating Hormone	Luteinizing Hormone	Blood Sugar Fasting
Correlation coefficient	-0.113	-0.053	.488
P value	0.327	.65	.000

Spearman rho correlation was calculated between Leptin, FSH, LH and BSF (Table 3). Leptin level significantly correlated with BSF with high correlation coefficient 0.488. There was no significant correlation between leptin and follicle stimulating hormone as well as luteinizing hormone.

Discussion

In the current study, the possible relation between leptin, BMI, BSF, FSH and LH in females with PCOS is investigated. Our findings suggest that PCOS women show a considerable elevation in leptin levels as compared to controls. Also that leptin is significantly correlated with BMI and blood sugar fasting. There is no correlation between FSH and LH.

Our study highlights that increased BMI is associated with increased leptin levels. These findings are similar to those observed by Baig et al. in which serum leptin is considerably correlated with BMI.[7] Chakrabarti confirmed that positive relation exists between serum leptin and BMI.[13] Serum leptin concentration was found to be related with BMI by a study conducted by Erturk.[14] Leptin levels were found significantly raised in patients with PCOS than in controls in study underwent by Zheng.[15]

The major action of leptin on nutrition is visible through the hypothalamic-pituitary gonadal axis. (Christian et al.,2008)[16] In our study, serum leptin level is significantly related with BMI in PCOS women. This result is corroborated with other studies as given above. This finding is expected as greater the fat depots, increased the BMI and more fat would lead to higher secretion of leptin.

Leptin has been shown to be raised with increasing BMI in many other studies. Our study is comparable with the study of Olszanecka-Glinianowicz et al. (2013) who reported considerably raised serum leptin level in PCOS subjects with changing BMIs.[7] Jacobs and Conway reported higher serum leptin levels in women with higher BMIs among PCOS.[17] Shore et al. found hyperleptinemia among adolescent girls with PCOS.[18] Leptin controls reproductive physiology and pathophysiology by two ways. One is by changing perceptibility of adenohypophysis to GnRH and second, by modulating the follicles and corpus luteum in ovaries to form steroid hormones. Hence, serum leptin has definitely a role to play in the pathogenesis of PCOS with raised BMI categories. Thus, leptin is assumed

to be a bridge between body's metabolic gauge and axis of reproduction.[19]

Leptin shows no correlation with FSH and LH whereas blood sugar fasting has a significant correlation with leptin. Sir-Petermann *et al*. had conducted a study with no relation found between leptin and LH.[20] Baig et al. narrated same observation for FSH and LH.[7] Studies by Legro and colleagues revealed that women with PCOS had hyperglycaemia. Vast proportion of them had glucose intolerance, a few had impaired glucose tolerance and little number had type II diabetes.[21] Susanne Hahn et al. found that leptin correlated with blood glucose, insulin resistance and other metabolic parameters in PCOS patients. Similarly, same study found no significant correlation with gonadotropins (FSH, LH).[22] Baig et al. found strong correlation between leptin and BSF.[7] These effects were due to raised blood sugar levels and ensuing insulin resistance. Leptin decreases glucose-mediated insulin secretion by leptin receptors in hypothalamus and therefore attenuates its action at level of cells.[20]

Leptin plays an important role in PCOS of higher BMI categories. Obesity leads to leptin resistance which opposes insulin action.[23] It is seen that females with PCOS and obesity show greater tendency of being hyperglycaemic and hyperinsulinemic. The role of leptin in PCOS-related obesity is that it changes the sensitivity and secretion of end organ tissues to insulin.[24,25] Simultaneously, obesity encourages increased levels of insulin like growth factors by way of insulin resistance leading to increased blood sugar.[26]

Conclusion

Body mass index influences serum leptin levels as well as blood sugar fasting. Leptin levels fluctuate with changing amount of fat tissue. There is no difference in average leptin levels between PCOS and non PCOS however, leptin level variates with changing BMI categories. Obesity leads to leptin resistance which opposes insulin action. Obesity adds fuel to fire by augmenting effects of leptin on metabolism and reproductive health. Leptin plays a role in obesity, emergence of PCOS and worsening of biochemical as well as metabolic profiles. Adiposity and glucose appear to be main determinant of leptin levels.

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ORIGINAL ARTICLE

Learning Professionalism in Medical College: Perspectives of Medical Students

Fareesa Waqar, Wajiha Shadab, Saadia Sultana, Shumaila Sharif

ABSTRACT

Objective: To assess the perception of medical students about teaching professionalism in medical colleges.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: The study was conducted in the Department of Obstetrics and Gynecology, Railway General Hospital, Rawalpindi, from 10th June, 2016 to 10th December, 2016.

Materials and Methods: A semi structured, amended and validated questionnaire was used to collect the data. The questionnaire was distributed among 55 final year male and female medical students. 27 (49.1%) participants were male and 28 (50.9%) were female students. The questionnaire comprised of 9 items to determine various aspects of students' perception about teaching medical professionalism in medical school.

Results: Fifty five students participated. Only 20% of the students' responses were positive about their pre-knowledge regarding the medical professionalism course. 30.9% students agreed for keeping professionalism course in medical schools. However, half of students' responses remained neutral. Majority of students (49.1%) disagreed with the effectiveness of lecturing to teach the professionalism. Majority of students (58.2%) approved the use of MCQs for the evaluation of professionalism course. The majority of males (82.1%) and females (70.2%) agreed with the effectiveness of course evaluation by MCQs.

Conclusion: A large majority of students were clear about the objectives of medical professionalism course and had opinion that the medical professionalism course should be taught with the use of technology rather than in the form of lectures and this course should be evaluated in the form of MCQs.

Key Words: *Medical Professionalism, Questionnaire, Student Feedback.*

Introduction

Medical professionalism, according to The Royal College of Physicians (RCP) can be defined as: 'A set of values, behaviors, and relationships that underpins the trust the public has in doctors', which includes 'integrity, compassion, altruism, continuous improvement, excellence and working in partnership with members of the wider healthcare team.[1] Various attributes of professionalism in medicine have been identified, including high ethical and moral standards, core humanistic values, role-modeling, scrutiny of behavior, professional identity, a continuing commitment to excellence and scholarship, leniency and sacrifice.[2,3]

Medical professionalism characterizes the roles and distinctiveness of medical students and physicians. The significance of medical professionalism has been highlighted as multiple reports of misconduct and ethics violation have been published in the science literature pertaining to the medical community. Worldwide medical professionalism has received increased attention by medical educationist. Today, every society with various cultural backgrounds expects that the medical students must be real professionals rather than merely acting professionally. Medical professionalism is one of the top priorities for the medical students, physicians and medical educators.

During training, medical students undergo both personal and professional development. Perceptions, in particular to required traits, are associated with the profession change, and impacted by encounters at their respective institutions. A recent study found that medical

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students thought that society requires them to be professional in all their dealings and negates the social aspect of their lives as an individual. Participants felt that they were always being viewed with high expectations of professionalism at all times from their choice in clothing to their activities.[2] In this modern digital age of social media and networking, medical personnel need to be ever more careful and be able to demonstrate professionalism in their online lives.[4,5]

It has now become the current emphasis of medical educationists that professionalism must be taught explicitly during undergraduate medical studies. With recent emphasis of medical institutions in inculcating professionalism and certain behavioral attributes into medical students, it is of interest to see the change in the level of professionalism as students' progress in their medical training and more importantly how they perceive the professional environment around them. The current study aimed to assess the perception of medical students about teaching the course on professionalism in medical colleges.

Materials and Methods

This descriptive cross sectional study was conducted in the Department of Obstetrics and Gynecology, Railway General Hospital, Rawalpindi from 10th June, 2016 to 10th December, 2016.

By using random sampling technique, fifty five final year medical students were invited to respond to the questionnaire. After explaining the purpose of the study, informed consent of the participant students was obtained and their confidentiality was ensured.

A semi structured amended questionnaire was used to collect the data. Initially it was a 12 item questionnaire which was then converted to a 9 item questionnaire after validation and then used for this cross sectional survey. The Likert scale was employed throughout the questionnaire. In Likert scale 1 and 2 were considered as disagreed, third was considered neutral, 4 and 5 were considered as agreed. Amendments, finalization and validation of the questionnaire were done by involving senior faculty from medical education department, senior clinical faculty and students' representatives. The validity of questionnaire was ensured by getting the views of above mentioned faculty and students representatives on areas of importance that could be improved upon.

The data was entered into the Microsoft Excel software and analyzed by using SPSS version 21.0 statistical software. In descriptive analysis, means with standard deviation of the continuous variables were computed. Frequencies and percentages of the categorical variables such as gender and age were calculated. Mean values and standard deviation were analyzed for each individual question.

Results

Fifty five students participated in the study. The response rate was 100%. 27 participants were male students (49.1%) and 28 participants were female students (50.9%). Out of 55 students, 30.9% agreed and 20% of the students disagreed for keeping current professionalism course in medical education while about half of the students remained neutral regarding the topic. The results indicate that only 20% of the students' responses were positive when asked about their pre knowledge regarding the professionalism course, of which 50.4% were males and 60% were females.

As far as the lectures are concerned in order to perceive the professionalism course 29.1% of the total students “agreed” and 49.1% of students “disagreed”. Out of the total agreed, 51% were males, whereas19.1% males disagreed. Of total agreed 44.1% were females while 20.5% females disagree. About the perspicuity of professionalism objectives total 45.5% of students agreed while 54.5% disagreed, out of total agreed, 20% were males and 80% were females.

Almost 80% students agreed about the usage of technology during the lectures among which, 58% were males and 42% were females. However 20 (36.4%) students agreed when asked about the interaction and support provided by the tutors and almost same number 23 (41.8%) of students were neutral of this question in which 44.4% were males and 29% were female. 83.6% students “disagreed” when queried about the inclusion of grades into final evaluation” and 10.9% replied as neutral. In addition, 78.2% students remained neutral or 10.9% students disagreed about “the professionalism course assists in learning of the other subjects”.

Regarding the participant's' reply on multiple

options question, overall 58.2% students replied by selecting the option that the course should be evaluated by MCQs while 30.9% students reported that the professionalism course should not be evaluated by MCQs, Also it was concluded that the majority of males (82.1%) and females (70.2%) were in favor of course evaluation being based on the MCQs. However, 90% students did not agree for the course evaluation to be in the form of essays furthermore 72.8% did not want group presentations to be a method of course evaluation.

Table I: Perception of Medical Students about Professionalism Course

Perception of Medical Students	Agree	Neutral	Disagree
The medical professionalism course should be included in medical education.	17 (30.9%)	27 (49.1%)	11 (20%)
Professionalism course should be taught in the form of lectures.	16 (29.1%)	12 (21.8%)	27 (49.1%)
The objectives of professionalism course are clear to students.	25 (45.5%)	0 (0%)	30 (54.5%)
The use of technology is effective in teaching professionalism course.	44 (80%)	8 (14.5%)	3 (5.5%)
The interaction and support provided by tutor is effective in learning professionalism.	20 (36.4%)	23 (41.8%)	12 (21.8%)
The grades of professionalism course should be included in final evaluation.	3 (5.4%)	6 (10.9%)	46 (83.6%)
The professionalism course assists in learning other subjects.	6 (10.9%)	43 (78.2%)	6 (10.9%)
The professionalism course should be evaluated by MCQs.	32 (58.2)%	6 (10.9%)	17 (30.9%)

Discussion

Medical professionalism is generally depicted as attributes of expert brilliance, honesty and benevolence.[6,7] This study planned to investigate the students' perception towards the professionalism course in medical schools. It was found that, only a few student responses were positive about their pre-knowledge regarding the medical professionalism course (20%) and approximately 30.9% medical students agreed for keeping the professionalism course in medical school. Similar findings were presented in a study which demonstrated that the professionalism courses should be taught in colleges in order to cultivate more polished professional skills in medical students, which in turn permits concentrating on appropriate proficient conduct.[8] Another study reported that medical schools in US are teaching professionalism as a separate course.[9] When inquired about lectures as a method for teaching the professionalism course 29.1% of the students agreed and an overwhelming majority approximating to 49.1% of students disagreed. A Lancet review in 2001 stressed upon the necessity of teaching professionalism in the form of lectures to medical students and suggested that rigorous research would be required in this area.[10] Regarding perceptions on the assessment system, most of the students reported that the professionalism course should be evaluated by MCQs. Previous studies have shown that there are no strategies on the most operative ways of supporting medical students to develop high standards of medical professionalism.[11] According to Hendelman et al.[12] most of medical institution had a professionalism curriculum in place for the pre clerkship phase but lack of formal program in the clerkship years. The present study identified a lack of knowledge or interest by the medical students in the current professional course. The most obvious reasons for the lack of interest in professionalism course was the assessment which students have not considered helpful and felt uncomfortable for having it on a weekly basis. Students agreed with use of technology during the lectures and showed a significant positive value. However, these attributes develop over time and are inculcated at all levels of medical training. The findings of this study demonstrate that 45.5% students agree that the objectives of the professionalism course were easy to understand throughout the course. An overwhelming majority of students (83.6%) disagree when asked about including their professionalism grade in their final assessment as this affected their overall performance in the course and shows that they are not ready to take it up full time. Feudtner et al.[13] found that 62% of medical students believed that during the course of their clerkship, their ethical

principles have been eroded.

Medical schools place the foundation for fostering the medical professionalism to practice the issues among practicing clinicians.[14] It is thus imperative that professionalism is incorporated into the undergraduate curriculum.[15,16] Cruess et al.[17] emphasized that a profession requires specialist knowledge and skills acquired through training and education and the professional is expected to use these attributes to serve the humanity.

Conclusion

The medical professionalism course needs to be included in medical education in order to make the students understand the goals and importance of the medical professionalism course in academic and clinical practice. A large majority of students were clear about the objectives of medical professionalism course and had opinion that the medical professionalism course should be taught with the use of technology rather than in the form of lectures and this course should be evaluated in the form of MCQs.

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Case Report

Gaucher Disease: A Case with Unexplained Splenomegaly

Ahsan Ahmad Alvi[1], Ayesha Nayyar[2], Rabiah Asghar[3], Muhammad Nadeem Akbar Khan[4], Ayesha Elahi[5], Ammar Naqvi[6]

ABSTRACT

A 5 years old male child presented with fever, repeated chest infection, short stature and developmental delay. On examination; he had massively enlarged spleen measuring 10 cm below left costal margin. He was advised bone marrow examination by pediatric consultant to find out the cause for splenomegaly. Bone marrow examination revealed hypercellular marrow with numerous mononuclear storage cells having fibrillary cytoplasm, morphologically resembling Gaucher cells. The bone marrow trephine biopsy also revealed heavy infiltration in the form of sheets of storage cells both interstitial and paratrabecular in distribution. These cells showed strong PAS positivity confirming the diagnosis of Gaucher disease.

Key Words: *Enzyme Replacement Therapy, Gaucher Disease, Glucoceribrosidase, Splenomegaly.*

Introduction

Gaucher disease is the most common sphingolipidosis. It was first described by Philippe Gaucher in 1882 in a patient with massive splenomegaly. Gaucher disease is the most prevalent form of lysosomal storage disorders with autosomal ressesive mode of inheritance. It is caused by deficiency of enzyme glucocerbrosidase leading to accumulation of its substrate; glucocerebroside in recticuloendothelial cells of the body, also called glucosylceramide.[1] There are three phenotypic presentations of Gaucher disease; Type1 Non-neuropathic is the most common form. It should be considered in all cases of unexplained splenomegaly and hepatomegaly. Pancytopenia may occur due to bone marrow suppression.[2] Gaucher disease type-2and type-3 are characterized by neurological involvement.[1]

Case Report

Mr Muhammad Ali Ahmad 5 years old boy presented in paeds OPD of Railway Hospital Rawalpindi with complaints of fever and repeated chest infection. He had short stature and developmental delay. He was 1st child of consanguineous marriage. He was born at full term by spontaneous vaginal delivery. He had history of strabismus for which he was operated upon about one and half year ago. There was no family history of similar illness in other siblings. On examination he was afebrile. His occipito-frontal circumference was 40.5cm. He had short neck with 13kg body weight and 96 cm height. Spleen was 10 cm enlarged. He was advised bone marrow examination to find out the cause of splenomegaly His blood complete picture showed hypochromia and microcytosis. The X-ray wrist joint showed radiological bone age of 32±06 months. The X-ray skull, chest and pelvis showed no abnormality.

Bone marrow examination revealed hypercellullar marrow with numerous storage cells mostly mononuclear with occasional binucleated forms; having fibrillary cytoplasm, morphologically resembling Gaucher cells. Bone marrow trephine biopsy showed moderately hypercellular marrow. There was marked infiltration in the form of sheets of storage cells having granular pink cytoplasm and strong PAS positivity; confirming the diagnosis of Gaucher disease. In some of the areas the infiltration was in the form of group of cells with interstitial as well as paratrabecular pattern.

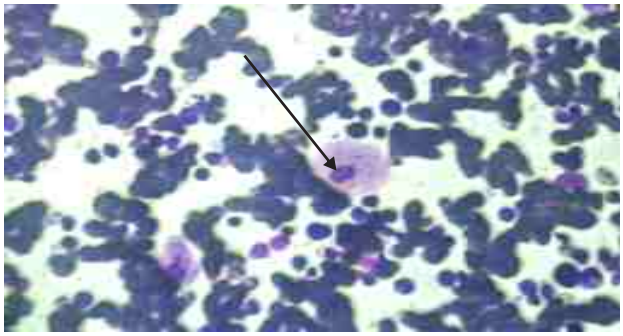

Fig 1: Bone Marrow Aspiration Smear Showing Gaucher Cells

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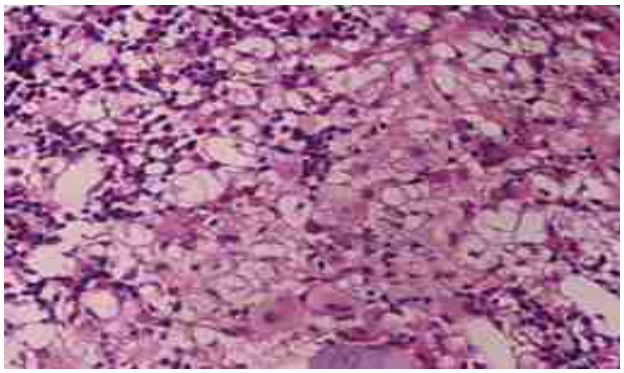

Fig 2: Bone Marrow Trephine Biopsy Showing Sheets of Gaucher Cells

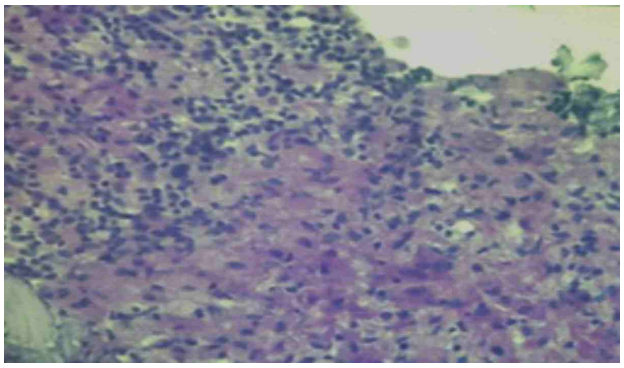

Fig 3: Bone Marrow Trephine Biopsy Showing Gaucher Cells with Diffuse PAS Positivity

Discussion

Gaucher disease is the most prevalent form of lysosomal storage disorders with autosomal recessive inheritance. Its prevalance is around 1/40,000 to 1/60,000 births in general population. The highest incidence is in Ashkenazi Jews, 1 in 850 individuals. [1] It is characterized by accumulation of glucocerebroside in the macrophages due to deficiency of enzyme β-glucoserebrosidase. 90% of the Gaucher disease patients present with moderate to massive splenomegaly.[3]

The molecular genetics of Gaucher disease involves GBA1 gene, located on chromosome 1 (1q21). More than 400 mutations have been found in the GBA1 gene. The common mutations in Ashkenazi Jews comprised of N370S, L444P and 84GG.[1] The N370S allele is also prevalent in other population of Europe, North America, and Israel.[4] L444P mutation in homozygous state is strongly associated with neuropathic Gaucher disease type-2 and type-3.[1]

In the past the diagnosis of Gaucher disease was made by the presence of Gaucher cells in the bone marrow aspiration and trepine biopsy. The classical features of these storage cells include a diameter of 20–100µm with eccentrically placed nucleus and striated cytoplasm having "wrinkled tissue paper appearance.[5] The Gaucher cells show strong Periodic acid-schiff positivity. Enzyme assay for β-glucoserebrosidase deficiency is the present day gold standard method for the diagnosis of Gaucher disease.[5] Other investigations include, blood complete picture, liver function tests , serum ferritin levels, ultrasound abdomen, chest X-ray, X-ray lower limbs and Magnetic Resonance Imaging (MRI) of bone and abdomen.[5] Imiglucerase as enzyme replacement therapy (ERT) is available for Gaucher's disease, but is expensive.[6]

Conclusion

Gaucher disease should be one of the differential diagnoses in all age group patients with unexplained splenomegaly.[7] Bone marrow transplantation is the only curative option in these patients with gene therapy as the future therapeutic modality.

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