CASE REPORT

Unveiling a Diagnostic Odyssey: A Case Report on Delayed Diagnosis of Creutzfeldt Jakob Disease

Shafaq Saleem[1], Ahmad Raza[2], Muhammad Haroon[3], Azeen Razzaq[4], Lubna Meraj[5], Salman Abdul Qayyum[6]

ABSTRACT

Creutzfeldt Jakob Disease (CJD) is a rare prion infection causing rapid, progressive, invariably fatal neurodegenerative disorder. It is reported in 1 in a million people per year worldwide[1] and only 12 cases have been reported over 21 years between 1994 to 2015 in Pakistan as per Agha Khan Hospital Karachi records.[2] We are reporting the clinical course of such a patient with delayed diagnosis and rapidly worsening symptoms.

Key Words: *CJD, Creutzfeldt Jakob Disease, Delayed Diagnosis, Polyspike Discharges, Prion Infection.*

Introduction

CJD is characterized by accumulation of abnormal, highly stable prion protein isoform aggregates in the brain tissue, causing deranged intracellular protein folding, ubiquitination and trafficking, resulting in astrocyte swelling and degradation leading to rapidly progressive neurodegeneration and inevitable fatal outcomes. Based on mode of transmission CJD is classified as being sporadic or genetic. Its initial presentation includes nonspecific symptoms like personality changes, vertigo, fatigue, headache and sleep disorders, ultimately leading to rapid progressing worsening memory, visual, speech, behavioral, movement and coordination abnormalities in later stages. CJD patients (90%) often die within a six month to one year of diagnosis mostly due to complications.[3]

Case

A 30-year-old previously healthy female, presented in emergency with 3-days history of fever, hallucinations and altered behavior. On initial evaluation, she had no meningeal signs and brain MRI, baseline lab investigations and lumber puncture yielded normal results. However, the patient kept on getting worse clinically. Upon re-evaluation the patient was found to have similar symptoms from past 3-4 months and was being taken as a case of supernatural influence. Subsequent hospitalizations revealed progressive neurological deterioration manifesting as right sided weakness, aphasia, decreased oral intake and altered sensorium. After thorough investigations, ruling out common diseases and receiving medical treatment on multiple lines including meningoencephalitis, Guillain Barre Syndrome, other autoimmune, toxic, psychiatric and metabolic disorders, the patient's condition kept on getting worse, necessitating ICU admission and ventilator support. However, as the disease progressed, the patient developed myoclonic jerks, non-conclusive status epilepticus and septic shock. Multiple complications including hypokalemia, thrombocytopenia, anemia and hypoalbuminemia also ensued.

Throughout her hospital admission, the patient underwent multiple investigations and aggressive treatment strategies including multiple antibiotics, immunosuppressants and immunomodulators, but she remained in a vegetative state without any specific provisional diagnosis.

Table I: Routine Examination of CSF

CSF Routine Examination	Result
Proteins	157 (Normal: 200-450 mg/L)
Globulins	Not increased
Glucose	9.7 (Normal: 2.5-4.5 mmol/L)
Leishmans stain	Occasional lymphocytes seen
Gram Stain	Organisms resembling cocci seen
ZN stain	No acid fast bacilli seen
Cytospin	No abnormal cells seen

CSF: Cerebro Spinal Fluid

In early phases the conventional MRI usually appears normal making it impossible to reach a provisional diagnosis based on a one single investigation. But

[1,2,3,4,5]*Medical Unit 1*
Benazir Bhutto Hospital, Rawalpindi
[6]*Department of Neurology*
Rawalpindi Institute of Cardiology, Rawalpindi
Correspondence:
Dr. Shafaq Saleem
Medical Officer,
Medical Unit 1
Benazir Bhutto Hospital, Rawalpindi
E-mail: shafaqsaleem6@gmail.com

Received: April 21, 2024; Revised: May 27, 2024
Accepted: June 07, 2024
https://doi.org/10.57234/jiimc.june24.2056

later in the clinical course of disease her MRI showed rapidly progressive brain atrophy and symmetric gyriform restricted diffusions indicating high signal intensities in the bilateral basal ganglia including caudate head & lentiform nucleus and the cortex of

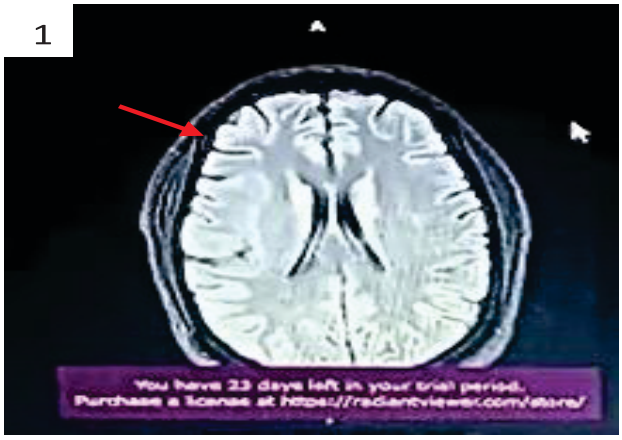

Figure 1: Cortical Ribboning and Deepening of Sulci Showing Cerebral Atrophy.

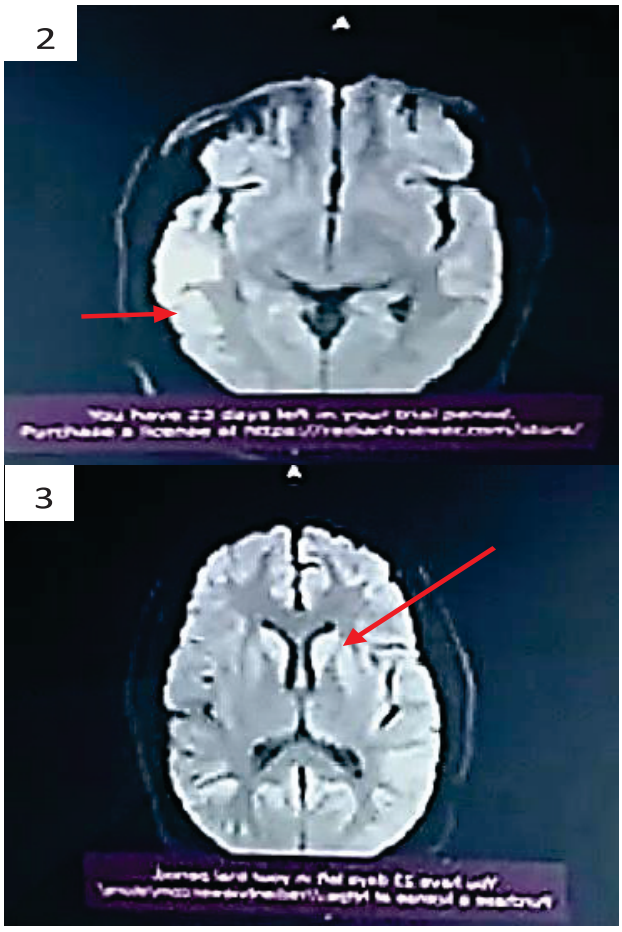

Figure 2 & 3: Gyriform Restricted Diffusions in Bilateral Basal Ganglia and Cortex of Posterior Temporal and Parietal Lobes.

Electroencephalogram showing generalized spike and polyspike discharges.

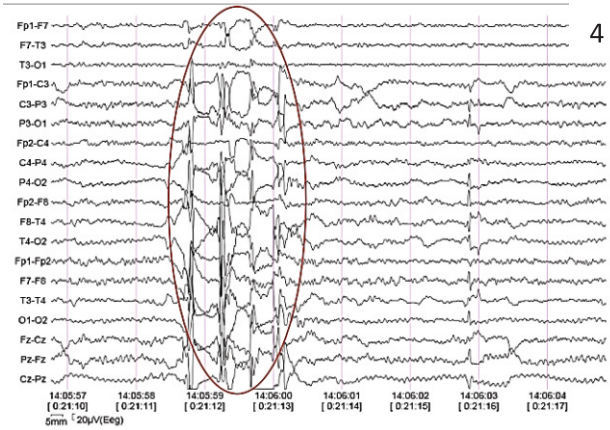

Figure 4: Electroencephalogram (EEG) Showing Generalized Spike and Polyspike Discharges.

bilateral posterior temporal & parietal lobes, which are well known findings of sporadic CJD.

Brain tissue biopsy is the gold standard investigation to confirm the diagnosis which often shows spongiform changes and granular deposits, but it could not be performed in this case due to nonconsent.[4] In line with the CDC criterion for sporadic CJD a diagnosis of probable Creutzfeldt Jakob Disease (CJD) was made.[5] After a total of 92 days in ICU, the patient succumbed to irreversible brain damage.

Discussion

This case was a delayed diagnostic challenge due to its non-specific presenting symptoms coupled with normal baseline investigations, inadequate history and lack of specific investigations and limited resources. Her atypical symptoms mimicked other neurological conditions, which were initially misattributed to supernatural influences and further progressed to more specific neurological signs such as unilateral weakness, altered sensorium and mycolic jerks, unveiling the diagnostic challenges and relentless nature of CJD. The treatment strategy involves supportive care only due to multiple non beneficial drug trials.[6] Despite continuous medical and nursing care the patients often succumb to associated complications such as pneumonia due to impaired swallowing or aspiration, sepsis due to secondary infections such as UTIs or bedsores etc., autonomic dysfunctions such as hemodynamic instability and dysrhythmias, thromboembolic

https://doi.org/10.57234/jiimc.june24.2056

events such as deep venous thrombosis (DVT) and pulmonary embolism (PE), malnutrition, dehydration, seizures and neurological impairments.[7]

Conclusion

In conclusion, timely access to diagnostic resources and enhanced interdisciplinary collaborations amongst healthcare professionals should be encouraged to navigate through the diagnostic and therapeutic challenges to decrease mortality and improvising the treatment modalities.

REFERENCES

1. Rasheed U, Khan S, Khalid M, Noor A, Zafar S. A systemic analysis of Creutzfeldt Jakob disease cases in Asia. *Prion.* 2024 Dec;18(1):11–27. doi:10.1080/19336896.2024.2311950.
2. Khan S, Khan S. Sporadic Creutzfeldt-Jakob disease: Diagnosing typical and atypical presentations under limited circumstances. *Dement Geriatr Cogn Disord* [Internet]. 2021 May 21;50(1):36–42. doi:10.1159/000514470.
3. Kelemen K, Kövecsi A, Banias L, Klára I, Mihály I, Forró C, et al. A Rare Case of Histopathologically Confirmed Creutzfeldt-Jakob Disease from Romania, Long Route to Diagnosis-Case Report and an Overview of the Romanian CJD Situation. *J. Clin. Med.* 2022 Aug 17;11(16):4803. doi: 10.3390/jcm11164803.; 2022:11.
4. Kishida H, Ueda N, Tanaka F. The advances in the early and accurate diagnosis of Creutzfeldt-Jakob disease and other prion diseases: where are we today? *Expert Rev Neurother.* 2023 Jul-Dec;23(9):803-817. doi: 10.1080/14737175.2023.2246653.
5. Madineni KUC, S V NP, Bhuma V. A Study of Clinical Profile, Radiological and Electroencephalographic Characteristics of Sporadic Creutzfeldt-Jakob Disease from a Tertiary Care Hospital. *Cureus*. 2023 Dec;15(12):e50008. doi:10.7759/cureus.50008.
6. Todd N V, Morrow J, Doh-ura K, Dealler S, O'Hare S, Farling P, et al. Cerebroventricular infusion of pentosan polysulphate in human variant Creutzfeldt-Jakob disease. *J Infect.* 2005 Jun;50(5):394–6. doi: 10.1016/j.jinf.2004.07.015.
7. Barnwal S, Jha G, Sola SC, Anand P, Shariff SY. Creutzfeldt-Jakob Disease: A Case Report and Literature Review for Understanding the Big Picture. *Cureus*. 2022 Nov 9;14(11):e31303. doi: 10.7759/cureus.31303.

CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

GRANT SUPPORT AND FINANCIAL DISCLOSURE

Authors have declared no specific grant for this research from any funding agency in public, commercial or nonprofit sector.

DATA SHARING STATMENT

The data that support the findings of this study are available from the corresponding author upon request.