



Case Report



Rabies Encephalitis with a Prolonged Incubation Period of Ten Years: A Rare Case Report and Clinical Reflection

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ABSTRACT

We present a case of rabies encephalitis in a man in early forties with an exceptionally prolonged incubation period of approximately ten years. Clinical presentation include acute-onset hydrophobia and agitation. History of a stray dog bite 10 years back without any post-exposure prophylaxis was subsequently elicited. Positive RT-PCR testing of saliva and brain tissue and histopathological identification of Negri bodies, confirmed Rabies.

KEYWORDS: Rabies encephalitis; Post-exposure prophylaxis; Negri bodies

INTRODUCTION

Rabies is undoubtedly one of the most fatal viral infections globally, with a near 100% case fatality rate once clinical manifest appear¹. It is caused by the rabies virus (neurotropic virus) which belongs to the *Lyssavirus* genus². Typically its incubation period ranges from 1 to 3 months, however it is well-documented that in rare case scenarios it can have significantly longer incubation periods³. Such scenarios are epidemiologically and clinically important but are often under-recognised and under-reported, especially in places with high stray dog populations along with very limited access to post exposure prophylaxis (PEP)⁴. We present a rare case report on rabies encephalitis with an exceptionally prolonged incubation period of more than ten years following a stray dog bite, highlighting various diagnostic challenges which emphasizes the crucial

role of PEP regardless of the time elapsed after the animal bite.

CASE PRESENTATION

A male in his early forties presented with acute-onset behavioral issues in form of agitation along with hydrophobia of 2 days duration. There was no associated history of fever, trauma, alcohol or illicit drug intake. On examination, he was afebrile, and hemodynamically stable but agitated but with no meningeal signs and focal neurological deficits. Initial differential diagnoses included metabolic perturbations, viral encephalitis including rabies, acute psychosis, substance abuse etc⁵. Cerebrospinal fluid (CSF) analysis showed normal cellularity and biochemistry (glucose and protein levels). CSF BioFire panel, RT-PCR for neurotropic viruses (including

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rabies), and tuberculosis PCR were negative. A urine toxicology screen was negative, and contrast-enhanced MRI of the brain revealed no hyper-intensities or contrast uptake.

Empirical treatment with antibiotics, antivirals, and sedatives was initiated. Within 24 hours of onset, his symptoms progressed and he developed severe agitation, hypersalivation, and subsequently required mechanical ventilation. Upon admission to the tertiary center (day 6 of illness), his four(full outline of responsiveness) score was 8 and he developed features of dysautonomia in form of tachycardia and labile blood pressure. Given the clinical suspicion/differential of rabies, salivary and nape-of-the-neck skin samples were sent[6]. Health care workers and family members involved in his transport and clinical care were administered PEP.

The patient's family also revealed a significant but remote history of him being bitten by a stray dog 10 years back, without any post-exposure prophylaxis.

He ultimately succumbed to his illness after 10 days of onset of illness. Saliva and brain tissue RT-PCR later returned positive for rabies virus. Post-mortem histopathology confirmed Negri bodies in brain sections, confirming rabies encephalitis.(Image 1)

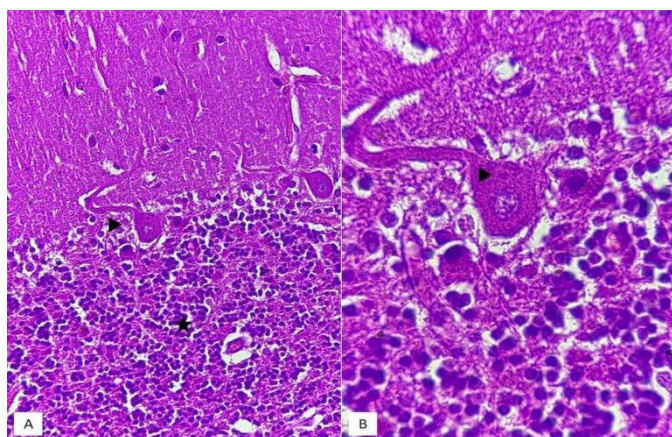


Figure 1: A. Histopathological section stained with hematoxylin and eosin(20×magnification) Cerebellum with granule cell layer(star)and purkinje cell layer(arrow head)

B. Hematoxylin and eosin(40×magnification) Purkinje cell shows intracytoplasmic eosinophilic inclusion/negri body(arrow head)

DISCUSSION

Rabies encephalitis typically and usually follows an incubation period of 1 to 3 months¹. However in rare instances, cases of longer latency have been documented, with the longest recorded incubation of 25 years was reported in 2012⁶. Several factors like site of exposure, viral load, host immune status, and

proximity to the central nervous system influence incubation duration.

In the index case, the unusually prolonged incubation of ten years raises critical public health and clinical considerations. Present case emphasizes the importance of thorough history-taking, even when the exposure have occurred many years prior and might be considered clinically irrelevant previously. Additionally, non-bite exposures—such as licks or scratches that breach the skin—can also transmit the virus, often overlooked by victims⁵. However the pathogenesis of such long incubation in rabies remains poorly understood. It is hypothesized that in some cases the virus may remain latent at the site of entry or in peripheral nerves before being disseminated to the CNS^{2, 4}

This case underscores several key lessons:

1. The importance of clinical suspicion in endemic regions;
2. The value of detailed history-taking, even with remote exposures;
3. The urgent need for public awareness and accessible rabies control programs^{3, 7, 8}.

CONCLUSIONS

This rare case report represents one of the few documented instances of rabies with an incubation period exceeding more than a decade. It reminds us the lethal nature of rabies, and most importantly necessity of timely post-exposure prophylaxis, and the need to consider remote past exposures in patients presenting with classical rabies symptoms. Further research is essential to understand viral latency mechanisms and host-pathogen interactions that can permit and explain such extended incubation periods of years^{2,6,9}.

CONFLICTS OF INTEREST STATEMENT

The authors declare no personal, financial, or institutional conflicts of interest in relation to the authorship and/or publication of this manuscript.

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CONSENT AND ETHICAL APPROVAL

A well-informed consent was taken from the family member of the patient for publication of the case. Ethical approval from the institutional review board was not required for this study.

AUTHOR'S CONTRIBUTION

All authors contributed equally to the data collection and manuscript writing.

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