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Case Report

Herpes encephalitis in an elderly immunocompetent lady – a case report

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ABSTRACT: Herpes zoster encephalitis is a rare complication of varicella zoster virus infection. As its clinical presentation is usually non-specific, it often goes unrecognized. Advent of polymerase chain reaction test for detecting viral particles in the cerebrospinal fluid has enabled rapid and accurate diagnosis.

KEY WORDS: ***Acyclovir; Encephalitis; Herpes zoster; Rash***

INTRODUCTION

Varicella zoster virus causes varicella or chicken pox in childhood and this virus can become latent in the cranial nerves and sensory nerve ganglia. Later it can reactivate to cause herpes zoster, also known as Shingles.

Both herpes zoster and varicella zoster can cause neurological complications. Herpes zoster encephalitis is an uncommon complication of herpes zoster and it can be suspected when there is rash alongside clinical features of encephalitis.

CASE DETAILS

Mrs. AK, a 75-year-old female patient, suffering from type 2 diabetes mellitus, on treatment, came to our general medicine outpatients department with history of decreased food intake for 2 days, and edema of right eyelid and drowsiness for 1 day.

On examination, she was febrile with a temperature of 100-degree Fahrenheit. Her pulse was 100 per minute and regular, and her blood pressure was 140/100 mmHg. Further, a few vesicles were noted over the right frontal region with edema of the right eyelid.

Examination of the cardiovascular system revealed no abnormalities; Respiratory system was normal; and abdomen was soft with no organomegaly. On Central Nervous System examination, the patient was conscious, drowsy and irritable, but was not responding to commands properly. She was moving all four limbs and her plantar reflexes were bilaterally flexor.

Her investigation results are given here: Hemoglobin - 10.7 g/dL, total blood count – 5,900/uL, platelet count – 3,17,000/uL, Liver Function Tests: Total Bilirubin - 0.4 mg/dL, Direct Bilirubin - 0.2 mg/dL, SGOT: 20 U/L, SGPT: 108 U/L, Total protein: 7.2 g/dL, albumin : 3.3 g/dL, globulin: 3.9 g/dL, A:G ratio: 0.85; Renal Function Tests: Creatinine 0.9 mg/dL; Serum Electrolytes - Sodium: 122 mEq/L, Potassium: 4.2 mEq/L; Fasting blood sugar: 162 mg/dL , PPBS : 278 mg/dL; Urine routine - Albumin +, WBC: 32, RBC: 24, Bacteria: Numerous; Urine culture: *Klebsiella pneumoniae*; and blood cultures (3 samples): Negative.

Chest x-ray and USG abdomen were normal. MRI Brain (Plain): Subacute to chronic infarct in right gangliocapsular region; chronic ischemic changes in pons and bilateral corona radiata; and diffuse cerebral atrophy.

CSF study revealed the following: TC: 125 cells/mm^3, DC: N: 35%. L: 65%. CSF Sugar: 142 mg/dL (45 – 80 mg/dL). CSF Protein: 145 mg/dL (15 -45 mg/dL). ADA: 12.3 U/L (Normal >40). CSF culture: No growth. AFB Stain: No organism seen. Cerebrospinal fluid cytology: Smears are acellular. Cerebrospinal fluid extensive comprehensive CNS

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panel: varicella zoster virus detected by Polymerase chain reaction method.

DISCUSSION

Among patients infected with herpes zoster, encephalitis occurs in 0.1 to 0.2 %[1]. Herpes zoster encephalitis has greater prevalence in immunocompromised people: HIV, post - transplantation, malignancy and advanced age[2-5]. Severity and location of herpes zoster involvement affect the risk of developing encephalitis. For example, the incidence is greater in disseminated herpes zoster - it increases the risk of developing encephalitis by 30%[6]. Herpes zoster encephalitis is more common in trigeminal distribution of shingles compared with other sites[5,7]. The incidence is also greater in patients with two or more prior episodes of herpes zoster and cranial nerve involvement. Diabetes mellitus is also a predisposing factor in the development of herpes zoster - associated neurological disease[8].

The usual clinical features of herpes zoster encephalitis include decreased level of consciousness, behavioral and personality changes, cognitive decline and memory impairment, seizures and so on[9-11]. Onset of central nervous symptoms usually occurs days to weeks or sometimes even up to months after herpes zoster eruption[3]. In a small number of cases, neurological manifestations have appeared before the rash[3,10,12]. Rare cases have been reported where herpes zoster encephalitis has occurred in the absence of rash.

After development of herpes zoster, the virus can spread to the spinal cord and brain leading to central nervous system complications[2]. Herpes zoster encephalitis exists in any one or a combination of three pathological patterns - Large vessel vasculopathy, small vessel vasculopathy and ventriculitis / meningitis, thus explaining variabilities of the presentation of the disease[4].

CSF examination typically shows a lymphocytic pleocytosis, with high normal to elevated protein levels and normal glucose levels, and brain CT is usually normal.

MRI is more sensitive and specific than CT for evaluating viral encephalitis[13]. MRI usually shows discrete subcortical non-enhancing spherical lesions that eventually coalesce, develop enhancement and spread to the grey matter. However, MRI abnormalities have also been observed in patients with uncomplicated herpes zoster. The combination of clinical presentation, CSF study, radiographic results and unilateral hyper-perfusion on single photon emission computed tomography increases the diagnostic yield[14]. EEG mostly shows diffuse slowing without much focal abnormality[7,9]. The most specific test is the polymerized chain reaction which detects viral DNA and which shows ongoing viral replication[13,15]. Usually PCR per viral DNA may become positive within 3 days after the appearance of the vesicle[15,16], however negative PCR does not rule out the diagnosis. False negativity may be due to insufficient DNA in CSF or variation in viral genome. PCR usually remains positive even after initiation of antiviral therapy[13].

The mainstay of treatment is intravenous acyclovir[17] at a dose of 10 – 15 mg/kg IV, every 8 hours for 10 – 14 days. Usually herpes zoster virus DNA disappears with antiviral treatment. The CDC recommends herpes zoster virus vaccine for people 60 years and above, whether or not the person had a prior episode of herpes zoster, given as a single dose. The vaccine is contraindicated in those with weakened immune system.

CONCLUSION

Herpes zoster encephalitis usually presents like any other form of encephalitis. Finding of a rash is the key to clinical diagnosis. CSF varicella zoster virus PCR is a highly sensitive and specific test for herpes zoster encephalitis. Acyclovir injection is considered beneficial.

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