VOLUME - 12, ISSUE - 07, JULY - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Medicine

CASE OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) CAUSING MENINGITIS AND CORTICAL VENOUS THROMBOIS WITH SEPTIC EMBOLI TO LUNGS

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ABSTRACT Community acquired Methicillin-resistant Staphylococcus aureus (MRSA) is commonly known for causing skin and soft tissue infections (1). However, meningitis caused by MRSA is an exceptionally rare occurrence, with an annual incidence ranging from 0.3%-8.8% [1]. More than 50% of MRSA meningitis cases are linked to neurosurgical interventions. These invasive procedures create a potential route of entry for the bacteria into the central nervous system. The remaining cases are classified as spontaneous or community-acquired meningitis, where the source of infection is not directly associated with any medical intervention. A classic triad of symptoms, consisting of fever, nuchal rigidity (stiff neck), and altered mental status, is observed in approximately 41% of MRSA meningitis patients [2]. While this triad serves as a key diagnostic indicator, it is important to note that it may not be present in all cases. Other common clinical features of MRSA-related meningitis include high-grade fever, severe headache, Glasgow Coma Scale (GCS) score below 14, and nausea. [3] In some instances, MRSA-related meningitis can be accompanied by other infections, such as sinusitis, otitis, pneumonia, or endocarditis [3]. These concurrent infections can further complicate the clinical picture and require careful management to address the multiple sources of infection. During the physical examination of patients with meningitis, specific findings may provide additional clues for diagnosis. These findings can include neck stiffness, Kernig's sign (resistance or pain in extending the knee when the hip is flexed at 90 degrees), Brudzinski's sign (neck flexion resulting in involuntary flexion of the hips and knees), or a jolt accentuation of headache (an exacerbation of headache with rapid horizontal head rotation). These signs, when present, can aid in the identification of meningitis. [3]

KEYWORDS :

Case Report

A 19-year-old male patient, without any known underlying medical conditions, presented to our emergency reception with a one-week history of fever, headache accompanied by neck pain, vomiting, and swelling on the left side of the forehead. Upon examination, the patient exhibited a Glasgow Coma Scale (GCS) score of 15/15, blood pressure of 120/80 mmHg, a pulse rate of 120 beats per minute, oxygen saturation (SP02) within normal limits on room air, respiratory rate of 32 breaths per minute, and a body temperature of 101.5°F. Neck rigidity, positive Kernig and Brudzinski signs were observed. Laboratory findings revealed leukocytosis, neutrophilic cerebrospinal fluid (CSF) with elevated protein levels and normal glucose levels. Viral panel, and tubercular workup was negative. The blood culture grew methicillin-resistant Staphylococcus aureus (MRSA). MRI of the brain demonstrated diffuse leptomeningeal enhancement with superior sagittal sinus thrombosis. Additionally, high-resolution computed tomography (HRCT) of the chest revealed septic emboli in both lungs.

During the patient's hospital stay, an episode of generalized tonic-clonic seizure (GTCS) occurred, and cortical venous thrombosis was identified. The patient also developed a cough and shortness of breath, which led to the discovery of septic emboli in the lungs. Furthermore, the patient experienced drug-induced agranulocytosis with febrile neutropenia, but fully recovered upon discontinuation of the implicated medications, namely, Piperacillin Tazobactam and Vancomycin.

The patient's management consisted of a six-week course of intravenous antibiotics tailored to the culture results, which initially included Piperacillin Tazobactam, Vancomycin (discontinued after the agranulocytosis episode), Cefepime, Clindamycin, and Acyclovir. Additionally, intravenous Levetiracetam and Enoxaparin were administered, with the latter being switched to oral Nicoumalone later.

The patient achieved a complete recovery and is currently under our regular follow-up care, exhibiting positive progress.

DISCUSSION

The usual presentation of MRSA meningitis is rapid onset of fever, altered mental status, and headache. Compared with patients with postoperative meningitis, patients with spontaneous meningitis had a significantly older age at presentation [4]. CSF Gram stain can be positive in approximately 30% of the patients.

In contrast to other bacterial meningitis, the lower yield of CSF Gram stain in MRSA meningitis (20%) has been previously reported in the literature [5]

Vancomycin with ceftriaxone should be considered as one of the drugs of choice for initial therapy of adult bacterial meningitis, especially in post-neurosurgical patients [6]. Infectious Diseases Society of America has recommended IV vancomycin with or without rifampin for MRSA CNS infections, for a duration of 4–6 weeks for abscess and subdural empyema and 2 weeks for meningitis. The alternative drugs recommended are linezolid and co-trimoxazole [7].

CONCLUSION

This case shows the importance of keeping a high suspicion of MRSA meningitis as it is rare. A good clinical judgement, timely diagnosis and early initiation of effective therapy can be lifesaving.

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