



A case of pneumococcal meningitis due to fall from height

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Abstract

Meningococcal disease is a serious infection that may progress quickly, even after proper treatment has started. We here report a case of adult patients with pneumococcal meningitis which was due to fall from height. A 28-year-old man which was fallen from a height presented to the emergency ward complaining of right elbow pain and head wound. His cerebrospinal fluid (CSF) was dark, yellow and semi-clear. Brain CT scan showed an old contusion frontal lobe. CSF cultures grew numerous colonies of *Streptococcus pneumoniae*. Antibiotic susceptibility was performed for the isolated *S. pneumoniae*. Vancomycin was administered immediately. Patient clinical state and signs of ongoing infection implied the possibility of a resistant pneumococcus. Then meropenem was added to the antimicrobial regimen which resulted in significant clinical improvement. Like other studies, this case suggests that pneumococcal meningitis should be considered in adult patients. Additionally the presence of gram-positive cocci in the CSF is associated with high mortality and morbidity. Treatment of this case with meropenem resulted in significant clinical improvement and subsequently improved the patient's condition. Therefore, antimicrobial therapy should be started immediately if there are any signs of meningitis.

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Introduction

For meningitis instant diagnostic steps must be taken to find the exact cause in order for appropriate antimicrobial therapy because it is a medical emergency (1). Many scientists reported that the death rate of untreated meningitis is too high, and, sometimes with ideal therapy, there is a high failure rate (2). Therefore, early treatments are of paramount importance in reducing mortality.

Bacterial meningitis can be suggested by various symptoms like fever, altered mental status, headache, and nuchal rigidity.

Even though one or more of these conclusions might not exist in many patients with bacterial meningitis, almost all patients have at least one of the classic triad of fever, neck stiffness, and altered mental status (3).

Streptococcus pneumoniae is one of the most important pathogens in cases of meningitis. A 28-year-old man was diagnosed with meningitis caused by *S. pneumoniae* and received treatment; during his clinical course. This report documents the case.

Key point

The most common cause of acute bacterial meningitis in adults is *Streptococcus pneumoniae*, and even with proper treatments, the fatality rates are as high as 55% for meningitis among the high-risk patients.

Case Report

A 28-year-old man which was fallen from a height presented to the emergency ward complaining of right elbow pain and head wound. He also had fever, headache, and disruption of familiarity with others, loss of consciousness (Glasgow Coma Scale; GCS 9/15). He also had fever and agitation during admission.

He was also disoriented during outpatient management. His vital signs were blood pressure 162/106 mm Hg, heart rate 150 beats/min, body temperature 39.5°C, respiratory rate 24/min, Pupils mid-size and reactions to light. Kernig's and Brudzinski's signs were positive.



Brain CT and a lumbar puncture were also conducted in the emergency ward. Her cerebrospinal fluid (CSF) was dark, yellow and semi-clear. The laboratory screenings of CSF revealed elevated protein level 450 mg/dL, and glucose 20 mg/dL, LDH of CSF was 652 U/L. CSF count revealed an increased leukocytes count (7900/ μ L with 90% polynuclear neutrophils, 90% monocytes, 10% lymphocytes, and RBCs 200/ μ L). The second brain CT scan showed an old contusion frontal lobe.

CSF cultures grew numerous colonies of *S. pneumoniae*. Antibiotic susceptibility testing was carried out for the isolated *S. pneumoniae*. Vancomycin was administered immediately.

While patient's clinical condition and signs of the infection showed the possibility of a resistant pneumococcus, meropenem was added to the treatment protocol which resulted in substantial clinical improvement and subsequently did well.

Discussion

The most common cause of acute bacterial meningitis in adults is *S. pneumoniae*, and even with proper treatments, the fatality rates is as high as 55% for meningitis among the high-risk patients (4).

Usually, bacterial meningitis can be diagnosed based on clinical symptoms and analysis of CSF. We encountered a case of bacterial meningitis with *S. pneumoniae*. Although data on bacterial meningitis particularly on *S. pneumoniae* in Iran have been previously reported (5,6), our study shows precisely in a teaching hospital in Karaj, presenting with better clarity, and the susceptibility pattern of *S. pneumoniae* to ceftriaxone, ciprofloxacin, vancomycin, and imipenem for the first time.

Identification and antibacterial resistance of the causative agent are key factors of effective antibiotic treatment. In view of emerging resistances, antibiotic treatment must be administered based on the cultural results in order to provide highly active therapy.

An alarming rise of bacteria with antimicrobial resistance has been reported worldwide, leading to changes in the empirical antibiotic therapy for pneumococcal infections (7,8). As treatment failure of therapeutic regimens such as third generation cephalosporins, chloramphenicol, penicillin, and vancomycin has been frequently reported.

Conclusion

This patient is the first case of in-vitro sensitive

pneumococcal meningitis which did excellent response to the antibiotic therapy. Therefore, it is suggested that vancomycin should be used. In addition, there are no case reports in the literature to date documenting successful treatment of such a case in Karaj.

Authors' contribution

MHD coordinated the collection of information on the patient and help to write the manuscript. EK supervised the manuscript preparation. PF, SS, MA, FR, and AEH coordinated the collection of information on the patient. MM contributed to microbiological work. All authors read and signed the final manuscript.

Conflicts of interest

There were no points of conflicts.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors. The patient has given his informed consent regarding this case report.

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