SUBDURAL EMPYEMA IN A 12-YEAR-OLD BOY: A RARE CASE REPORT

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ABSTRACT

Introduction: Subdural empyema (SDE) is one of the most important infections of the nervous system that can be associated with high mortality and morbidity. This case report presents a Subdural empyema in a 12-year-old Afghan boy living in Iran. Case presentation: The patient in the current report was referred to a general practitioner with headache and sinusitis symptoms such as post-nasal drip (PND) and fever who received a dose of penicillin. Within 2 days after receiving penicillin by intramuscular injection, the patient felt weakness in his left leg muscle below the knee. In the first instance, it seemed that the pain was caused by injury to the sciatic nerve. However, over the next two days the weakness of lower left side of patient’s body gradually progressed to worse condition so that its force was reduced to three-fifth. Discussion: Additionally to antibiotic therapy and rapid surgical treatment, the main significant step appears to be extensive craniotomy and direct removal of subdural pus, especially from the Inter hemispheric fissure. In our case presentation, the treatment of choice was pharmacotherapy with surgical treatment. However, response to non invasive method was satisfying. Conclusion: It is important to educate the general practitioners about intramuscular injection of drugs to note if the patient showed symptoms such as hemiparesis or paralysis also might speculate other cognitive estimation such as brain space-occupying lesions rather than sciatic nerve damage only.

Key words: Subdural empyema, Abscess, Intracranial, Brain Abscess

INTRODUCTION

Subdural empyema (SDE) is one of the most important infections of the nervous system that can be associated with high mortality and morbidity (1-3). SDE is less common in children than adults (2). Ear, nose and throat infections, and more importantly the infection of paranasal sinuses are the main important risk factor in afflicting SDE (1-6). Male and young children are mostly involved with SDE (1-3). It is estimated that about 40 to 70 percent of SDE cases have been in related with ear, nose and throat infections such as sinusitis, otitis media, mastoiditis. Also, about 6 to 30 percent of SDE cases have been
reported in association with head injuries and brain surgery (1-3),(6-8). SDE have also been reported in neurosurgery and installing catheters (9, 10). Other factors involving in SDE are diabetes mellitus, alcoholism, lung infection, and sepsis (2,3). Early diagnosis and treatment are effective in reducing mortality and morbidity (11). SDE is caused by Haemophilus Influenza meningitis and Streptococcus pneumonia in pediatric (12). Also, cases of SDE have been reported following Salmonella and Neisseria infections (13-18). The best way to detect SDE is computerized tomography (CT) or magnetic resonance imaging (MRI) (19-21). Also, drug treatment has been effective in some cases (22). Craniotomy can be effective in cases which SDE is related to the upper chambers of the brain (2,23,24). Mortality rate due to Empyema has been reported as 12% (1-4). Age, level of consciousness, duration of disease, rate of progression and invasive treatment are affecting factors on the prognosis of disease (25-26). This case report presents a Subdural empyema in a 12-year-old Afghan boy living in Iran.

CASE REPORT

The patient in the current report was referred to a general practitioner with headache and sinustitis symptoms such as post-nasal drip (PND) and fever who received a dose of penicillin. Within 2 days after receiving penicillin by intramuscular injection, the patient felt weakness in his left leg muscle below the knee. In the first instance, it seemed that the pain was caused by injury to the sciatic nerve. However, over the next two days the weakness of lower left side of patient’s body gradually progressed to worse condition so that its force was reduced to three-fifth. Babinski sign was obtained. Deep tendon reflexes and steppage gate, falling the deep tendon reflexes (DTR) and impairment of proprioception occurred. The signs involved the left upper extremity so that the patient's left upper and lower limbs muscle strength was reduced as much as two-fifth. In experiments, leukocytosis with left shift and also increased erythrocyte sedimentation rate (ESR) was observed. The results of tests on admission were as follows: WBC:24900/ml (Neutrophile:86%, lymphocyte:13%, monocyte: 1%), HB:11.4 mg/dl, HCT:34.3%, PLT: 555000/ml, ESR: 104 mm/hr at the first hour, CRP: 1+, Ca: 7.2 mg/dl, blood sugar: 172 mg/dl. Blood and urine cultures of the patient were negative. According to the patient's race and the possibility of tuberculosis, the chest x-ray was ordered but a normal chest x-ray found. In CT scan without injection (Fig 1) and also MRI (Fig 2), an extra-axial fluid with edema was observed on the cortical surface of right frontal lobe, especially in the parasagittal area which was accompany with edema around the disproportionate
size of the subdural accumulation. The images with contrast agent injection, peripheral enhancement was observed with a uniform thin edge (Fig 3). With regard to the clinical picture of acute Sphenoidal and Ethmoid sinusitis in MRI, the diagnosis of subdural empyema was made for the patient. The patient treated with ceftriaxone, vancomycin, metronidazole and dexamethasone. About two days after medical treatment, the patient symptoms began to disappear. CT scans of the patient in the days after the treatment did not show any reduction in the lesion size. Also leukocytosis was reported accompanied by a left shift. ESR had decreased trend to 27 mm till the 11th day but began to have increased trend to 66mm on the 14th day. The next CT scan showed the partial increase in the size of subdural empyema which extended to the parietal area. The patient was a candidate for surgical drainage but was not gone under the medical surgery because of dissatisfaction of patient family. Continuing medical therapy until the end of the third week resulted in complete remission of symptoms. Patient was discharged without neurological symptoms and fever. He was followed-up at outpatient ward within three months after discharge who resulted in complete recovery.

**DISCUSSION**

Bacterial, fungal and viral infections of the CNS are considerable diseases generally associated with decline mortality over the decades. A review in the literature
showed that in out of 66 cases with subdural empyema, the survival rate of 90% was anticipated. Additionally to antibiotic therapy and rapid surgical treatment, the main significant step appears to be extensive craniotomy and direct removal of subdural pus, especially from the interhemispheric fissure (27). In our case presentation, the treatment of choice was pharmacotherapy with surgical treatment. However, response to non invasive method was satisfying. Pathogenesis of subdural empyema in infants is different from adults. It occurs as a comorbid or complicating feature of meningitis, but in older age it is mostly follow to spread from a contiguous focus such as paranasal sinusitis or mastoiditis (28). In our case presentation, it was originated from Ethmoidal and Sphenoidal sinusitis. Thanks to advancements in antimicrobial therapy, improved imaging, and neurosurgical methods.

CONCLUSION

It is important to educate the general practitioners about intramuscular injection of drugs to note if the patient showed symptoms such as hemiparesis or paralysis also might speculate other cognitive estimation such as brain space-occupying lesions rather than sciatic nerve damage only.

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