

Atypical Presentation of Bacterial Meningitis in Pregnancy

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Case presentation:

This is a case of a 27 years old pregnant lady, previously healthy, G1P0 having a twin pregnancy at 35w GA. Presented to the ER unconscious with tonic clonic seizure and a BP level reaching 200/110mmhg.

Her mother mentioned that she was trying to awaken her at morning, but the patient was not responding and it appeared that she had spontaneous urination. To note that the evening before, patient was complaining from moderate headache that was relieved on pain killers, she went to sleep but noone checked on her all over the night.

She had a well followed pregnancy and her last clinic visit was at 32 w GA when she had normal blood pressure readings, normal labs, and no protein in urine. morphoscan done at 20w GA and reported no abnormality.

Upon presentation an urgent intubation was done, received valium, magnesium loading dose given and a 2g/h course started.

An urgent CT scan showed no intracerebral hemorrhage, followed directly by an urgent uncomplicated cesarian resulting in the delivery of liveborn twins APGAR 8/9 at 1 and 5 mins respectively.

Post cesarian, trials for extubation failed and she was transferred to ICU. Preeclampsia workup turned out to be negative (creatinine:0.5, platelets:212, uric acid:3, SGOT:15, WBC:23).

Thereafter a first episode of high grade fever was documented 12 hours post partum, panculture taken and rocephine course started. Patient was fully sedated having blood pressure readings ranging between 110/90 and 130/100 mmhg.

Additional high body temperature readings was documented with max T reaching 41°C. Upon neurologic exam she had no corneal reflex, and was not responsive to painful stimuli with recurrence of seizures upon trials to decrease sedation. Her labs revealed high WBC count(36.9) which in addition to a sustained high grade fever both raised the diagnosis of meningitis therefore she was started on zovirax and switched to broad spectrum antibiotics. An urgent CT brain was done and showed hypodense areas in bilateral thalamus, right mid brain peduncle and left cerebellar hemisphere that could have been due to ischemic infarct. Chest Xray and CT angiography were normal and EEG showed severe cerebral dysfunction.

Lumbar puncture results in the diagnosis of bacterial meningitis based on CSF cellularity. Despite thorough ICU monitoring, full coverage antibiotics, patient status was deteriorating rapidly her glasgow coma scale equaling 3 predicted a very bad prognosis and she passed away 3 days post partum following a cardiac arrest.

Introduction:

Community-acquired bacterial meningitis is a serious and life threatening disease with an incidence in the general population of 2.6-6 cases per 100,000 adults, and is even rarer in pregnancy (1;2). Bacterial meningitis in pregnancy is very uncommon and constitutes a medical emergency with high mortality rate for both the mother and the child due to



the resulting septic shock and multi-organ failure in the mother if not recognized early (1-3). A study suggests that bacterial meningitis has an estimated mortality rate of more than 20% in adult (2). During pregnancy, there is shifting from TH1 to TH2 and immunosuppressive cytokines are produced by the placenta and foetus to avoid immunological attack by the mother. Surprisingly, this mechanism did not lead to increased susceptibility to infectious diseases in pregnancy (1). Only few cases of bacterial meningitis have been described during pregnancy. The prognosis of bacterial meningitis in pregnancy is unclear (1;3). Despite optimal treatment, bacterial meningitis during pregnancy can have a rapidly fatal outcome for the mother and child (3). We present a case of young pregnant mother presenting at late preterm with seizure and decreased level of consciousness, diagnosed with bacterial meningitis and ended up with fatal outcome.

Discussion:

Bacterial meningitis in pregnancy is very uncommon with high mortality rate for both the mother and the child (1;3). Neurologic sequelae in patients that survive the initial insult occurs in as many as 30% of all cases. These include seizure, hearing loss, impaired mental status, and/or cognition (3). Miscarriage is also common following meningitis (60%). The cause of spontaneous abortion is still unknown. Foetal loss, stillbirth or invasive disease in the newborn are other complications (4). Therefore prompt diagnosis and treatment are imperative to reduce the rate of death and long-term neurologic compromise (3). According to Adriani et al, the two most common pathogens are streptococcus pneumonia and listeria monocytogenes, since the development of the haemophilus influenza type B vaccine (1-3). However, in a nationwide prospective cohort study in the Netherlands, no cases of bacterial meningitis during pregnancy due to organisms other than Streptococcus pneumonia were identified (5).

The typical clinical presentation of bacterial meningitis in adult is the triad of fever, neck stiffness, and headache. However, pregnant patient would rather present with headache (87%), altered mental status (73%) fever (60%) and signs of otitis (60%) (2;3). Hence early recognition is crucial in maternal survival (2).

This case report represents an atypical presentation of bacterial meningitis in pregnancy. In fact, seizure and high blood pressure upon presentation were misdiagnosed as eclampsia. However preeclampsia workup turned out negative. The other differential diagnosis is cerebrovascular accident (CVA). Neither CT brain nor Angioscan confirmed this diagnosis.

Lumbar puncture is the best tool to confirm the diagnosis in patients suspected to have meningitis. However, imaging should be completed first in patients with new onset seizure and signs of severe decrease in level of consciousness (3).

Current standard therapy for bacterial meningitis include antibiotic and adjunctive dexamethasone (1;6). They should be initiated as soon as possible as delay in treatment can result in poor prognosis (3). The use of dexamethasone seems appropriate in pregnant women specially in the third trimester as it improves foetal lung maturity in impending preterm birth (6). In addition, It has been shown to reduce the risk of death and neurologic disability in adult

with meningitis (3;7). While awaiting for the culture of cerebrospinal fluid (CSF), the choice of initial antibiotics is based on the most common bacteria causing the disease according to patient's age and clinical setting. Since the most common cause of bacterial meningitis in the childbearing age is streptococcus pneumonia nowadays, a combination therapy of vancomycin and third generation cephalosporine is now the standard approach. (7). Scant literature available suggest that an extended interval between the onset of maternal illness and delivery provided an important window of time for maternal and neonatal well-being (3;8).

Van de Beek et al have listed the risk factors of an unfavourable outcome which are: advanced age (>60 years), presence of otitis/sinusitis, absence of rash, low score on Glasgow Coma Score (<8), tachycardia (120 bpm), a positive blood culture, an elevated erythrocyte sedimentation rate (>56), decreased platelet count (<180.000/mm³), low CSF white-cell count (<100/mm³) and causative species Streptococcus pneumonia (8). Our patient have met 4 (still waiting for blood csx results and csf cultrue) out of these criteria which predisposes her to a poor outcome.

Conclusion:

It is difficult to draw a conclusion from an isolated case report. This is an uncommon presentation of bacterial meningitis in the late preterm. Accurate and timely diagnosis and a high index of suspicion is required. Lumbar puncture for culture is the cornerstone of diagnosis to determine the causative organism and appropriate treatment. Bacterial meningitis in pregnancy carries a bad prognosis for both the mother and the foetus.

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