

Escherichia coli meningitis and septicemia

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Abstract

Adult bacterial meningitis has a very high mortality rate. Escherichia coli is an unusual presentation for adult meningitis. We are reporting a case of 65 year old diabetic male presented with fever, abdominal pain & altered sensorium. On evaluation he was found to have E. coli meningitis secondary to septicaemia following UTI by same organism. He was started on Meropenem, but later changed to Imipenem according to culture & sensitivity results. Patient responded well to treatment and got discharged after 2 weeks of hospital stay.

Key words: E.coli, meningitis, meropenam, imipenem, efflux pump.

Introduction

Escherichia coli (E. coli) is a common pathogen of paediatric bacterial meningitis. It is an uncommon pathogen in adult bacterial meningitis [1]. Occurrence is more in cases of immune suppression or cirrhosis [2]. Even with treatment, it carries a high mortality ranging from 27% to 90%, and mortality without treatment is 100% [3].

Case Report

We present a patient who is a 65 year old male, known diabetic for past ten years on oral antidiabetic drugs and hypertensive for past 6 years. No other significant medical or surgical history in the past, He is also a chronic smoker and alcoholic. The complaint started as fever with chills and rigor along with left sided upper abdominal pain. He was initially evaluated in another hospital. Investigations showed neutrophilia and elevated renal function test. Electrolytes were normal. USG Abdomen -showed left renal parapelvic cyst, fatty hepatomegaly & gall bladder calculus. Patient developed altered sensorium and restlessness next day for which CT scan of brain was taken which was normal. The patient was shifted to our hospital. Patient was stuporous and febrile. Patient was moving all four limbs to painful stimuli. Pupils were of normal size & reacting to light.

There was partial ptosis on left side. Plantar reflexes were bilaterally flexor. Patient had neck stiffness & Kernig's sign was positive. Abdomen was soft, distended with diffuse tenderness. No hepatosplenomegaly. Other systems were all within normal limits. Urine output was reduced.

Initial investigations showed neutrophilic leucocytosis with a total count of 17,500 cells/mm³ [3], ESR – 97mm/1st hour and thrombocytopenia (1.2lakhs/mm³). Urine showed 6 –8 pus cells with presence of bacteria & 0 – 1 RBC/HPF. Renal function test showed elevated blood urea (109mg/dL) & creatinine (4.4mg/dL) values. Liver function test was normal except for mild hypoalbuminemia (3.2g/dL). Blood sugars were normal. Serum procalcitonin & C-Reactive Protein (CRP) values were highly elevated. Repeat USG Abdomen was done which showed acute pyelonephritis of left kidney, cystitis, Fatty liver and gall bladder calculus. Blood and cerebrospinal fluid (CSF) were sent for microbiological analysis. Patient was suspected of having a gram negative septicemia. Blood was examined using routine blood culture, which grew Multi drug resistant Escherichia coli which was sensitive to Imipenem and resistant to Meropenem CSF study showed total count of 1600 cells with 80% neutrophils,

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elevated protein & low sugar values consistent with pyogenic meningitis. On direct examination of CSF there were pus cells with abundance of Gram negative bacilli. Patient initially showed improvement in sensorium, . On third day his condition worsened & he was febrile (102°F), drowsy. Then blood & CSF culture reports were available by this time which showed multi drug resistant E. coli sensitive to Imipenem but was resistant to Meropenem. Urine culture did not show any bacteria. So patient was started on Imipenem & dose was adjusted for his renal function. Next day patient showed improvement with decrease in fever spikes. One sitting of hemodialysis was done. After two days patient was afebrile with normal sensorium & adequate urine output. So a final diagnosis of E. coli meningitis secondary to septicaemia following urinary tract infection in a patient with diabetes & hypertension was made. Patient got discharged after fourteen days of antibiotic treatment.

Discussion

E. coli meningitis is very rare in adult population [1]. It is usually seen in adults with immunosuppression due to various causes. The main risk factors are alcoholism, cirrhosis, neoplastic diseases, diabetes mellitus, and treatment with immunosuppressive agents. Others cases occur frequently in neurosurgery and are usually associated with multi-drug resistant strains[2]. E. coli sepsis is often secondary to underlying urinary or biliary tract. Vascular infections and meningitis due to E. coli are exceedingly rare and few cases isolated have been reported[3,4,5]. Our patient had septicaemia secondary to urinary tract infection with E. coli which is the cause for this rare presentation of E. coli meningitis. Also the E. coli isolate in our patient was Imipenem sensitive but resistant to Meropenem. This is due to an efflux pump mechanism which is mostly described with Pseudomonas & uncommon with E. coli [6]. This efflux pump mechanism is very rare for E.coli infection.

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