

## Case Report

# A rare manifestation of *Escherichia coli* septicemia

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### ABSTRACT

*Escherichia coli* (*E. coli*) is an uncommon pathogen of adult bacterial meningitis. In adult patients it carries a high mortality. 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.

**Keywords:** *E. coli*, Meningitis, Septicaemia, Imipenem

### INTRODUCTION

*Escherichia coli* (*E. coli*) is a common pathogen of paediatric bacterial meningitis. It is an uncommon pathogen in adult bacterial meningitis.<sup>1</sup> It generally occurs in patients with compromised immune status or cirrhosis.<sup>2</sup> Even with treatment, it carries a high mortality ranging from 27% to 90%, and mortality without treatment is 100%.<sup>3</sup>

### CASE REPORT

The patient is a 65 year old male, who is a known diabetic for past ten years on oral antidiabetic drugs and hypertensive for past 6 years on Atenolol. 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 initially. Investigations showed Hb - 13.9g/dL, TC - 10900 cells/mm<sup>3</sup> of which neutrophils constitute 89%, ESR - 42mm/1<sup>st</sup> hr, Platelet Count - 1.4 lakhs/mm<sup>3</sup>, Blood Urea - 45mg/dL, Serum Creatinine - 2.7mg/dL. 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. As patient got deteriorated the patient was shifted to our hospital.

Patient was stuporous and febrile. Pulse was 112/minute, BP - 140/90 mmHg. 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.

Investigations showed neutrophilic leucocytosis with a total count of 17,500 cells/mm<sup>3</sup>, ESR - 97mm/1<sup>st</sup> hour and thrombocytopenia (1.2lakhs/mm<sup>3</sup>). Urine showed 6 - 8 pus cells with presence of bacteria & 0 - 1 RBC/HPF. RFT showed elevated blood urea (109mg/dL) & creatinine (4.4mg/dL) values. LFT was normal except for mild hypoalbuminemia (3.2g/dL). Blood sugars were normal. Tests for malarial parasites were negative. Serum procalcitonin & CRP values were highly elevated. Repeat

USG Abdomen was done which showed acute pyelonephritis of left kidney, cystitis, Fatty liver and gall bladder calculus. CSF study showed TC of 1600cells with 80% neutrophils, elevated protein & low sugar values consistent with pyogenic meningitis. So patient was started on Meropenem. Patient initially showed improvement in sensorium, even though creatinine value increased to 6.1mg/dL. On third day his condition worsened & he was febrile (102<sup>0</sup>F), drowsy. He developed breathlessness and had fall in his oxygen saturation but was maintained in normal limits with oxygen at 2L/minute. Chest showed minimal basal crepitations bilaterally. Both 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, creatinine decreased to 5.1mg/dL. 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 UTI 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<sup>1</sup>. 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<sup>2</sup>. Blood stream infections due to E. coli in adults are often related to underlying urinary or biliary tract or other intra-abdominal infections. Vascular infections and meningitis

due to E. coli are exceedingly rare and few cases isolated have been reported.<sup>4,5</sup>

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.<sup>6</sup> So our case has both an unusual clinical presentation along with an uncommon drug resistance pattern of E. coli.

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