ISOLATION OF INACTIVE E. COLI FROM A PATIENT WITH FOURNIER’S GANGRENE – A CASE REPORT

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Abstract: 60 year old male patient presented to surgery OPD with complaint of urinary retention with dribbling of urine since a night before coming to the hospital & swelling & discharge from perineum since 1 day. Patient had a history of Gastrointestinal Stromal Tumor (GIST/ Ca colon) operated at the age of 3 years & permanent colostomy was done for the same. Foleys catheterization was attempted but catheter could not be passed, so suprapubic catheterization was done and patient was admitted in surgery ward. After examination, clinical diagnosis of Fournier’s gangrene was made & surgical debridement of perineum was done. Pus & necrosed tissue sample was sent to microbiology laboratory for culture & sensitivity. Both samples grew Nonlactose Fermenting (NLF) colonies on Mac Conkey agar & smooth beta hemolytic colonies on Blood agar which later were confirmed as Inactive E.coli by further tests. Both isolates showed similar antibiotic susceptibility pattern.

Keywords: Fournier’s gangrene, NLF, beta hemolytic, Inactive E.coli

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INTRODUCTION

Theodor Escherich first reported the isolation & characterisation of slender short rods from infectious stool, which he named Bacterium coli commune in his 1885 publication. Pathogenic E.coli can cause a broad range of human diseases that span from the gastrointestinal to extra intestinal sites such as urinary tract, bloodstream & CNS. [1]

DNA relatedness was used to define biochemical boundaries of Escherichia coli. A large number of biochemically atypical strains were shown to belong to biogroups of E.coli. These included strains negative in reactions for indole, all three decarboxylases, D- mannitol, lactose or methyl red and strains positive in reactions for H₂S, urea, citrate, KCN, adonitol, myo-inositol or phenylalanine deaminase.[4]

CASE REPORT

60 year old male patient presented to surgery OPD with complaint of urinary retention with dribbling of urine since a night before coming to the hospital & swelling & discharge from perineum since 1 day. Patient had a history of GIST (Ca colon) operated at the age of 3 years & permanent colostomy was done for the same. Foleys catheterization was attempted but catheter could not be passed, so suprapubic catheterization was done and patient was admitted in surgery ward.

On examination, patient was afebrile & his pulse & Blood Pressure & systemic examination was within normal limits. Local examination of perineum, revealed necrosed perineal tissue & diagnosis of Fournier’s gangrene was made.

Laboratory investigations revealed normal random blood sugar level, increased serum total & direct bilirubin, decreased serum protein & decreased serum potassium & decreased serum sodium & chloride.CBC showed Hb 6gms/dl, PCV 18, RBC count 1.90 , increased RDW , decreased lymphocytes.

USG Abdomen &pelvis showed liver metastasis, bilateral hydroureretonephrosis, mild ascites &BEP. Cystoscopy was done. Anterior bulbar urethral stricture was present which was dilated.

Surgical debridement of all necrosed tissue in perineum was done under spinal anaesthesia. Patient was started on inj.Piptaz, inj.Metrogyl. Pus & necrosed tissue sample was sent to microbiology laboratory for culture & sensitivity.

On culture, smooth opaque beta hemolytic growth was obtained on blood agar & nonlactose fermenting transparent spreading colonies MacConkey agar. (Fig.1)
Fig. 1 NLF colonies on MacConkey agar

Fig. 2 AST By Kirby Bauer Disk Diffusion Test

Fig. 3 Positive Nitrate Test
Organism was Nonmotile, Oxidase negative, Nitrate reducing, Indole & MR tests positive, VP, Citrate, Urease tests were negative. TSI showed Acid slant & Acid butt with gas production, Glucose, Maltose, Sucrose were fermented with production of acid & gas. The organism was resistant to Piperacillin-Tazobactum, Ampicillin-sulbactum, Gentamicin, Moxifloxacin, Ciprofloxacin, Cefotaxime, Cefuroxime, Cephalexin and was sensitive to Netilmicin, Cefoperazone-sulbactum by Kirby Bauer Disc diffusion test interpreted as per CLSI, 2014. [2]

Similar isolate was recovered from other sample (Tissue) at the same time which showed similar antibiotic susceptibility pattern.

**DISCUSSION**

E.coli is the bacterial species most commonly recovered in the clinical labs & has been incriminated in infectious diseases involving virtually every human tissue & organ system. E.coli is one of the common organisms involved in Gram Negative sepsis & endotoxin induced shock. UTI & wound infections, pneumonia in immunosuppressed hospitalized patients & meningitis in neonates are other common infections caused by E.coli. [3]
During the past decade several E.coli like biogroups have been identified. Some such as H₂S positive, urea positive & citrate positive biogroups are assumed to be E.coli. Other less familiar biogroups include strains positive in reactions for KCN, adonitol, inositol or Phenyl Alanine Deaminase & strong negative in reactions for MR or mannitol. With exception of H₂S positive & urea positive biogroups, little is known about source, relative frequency & potential clinical significance of these E.coli biogroups. [4]

E.coli inactive previously designated as Alkalescens –Dispar is anaerogenic, lactose negative (Or delayed) & nonmotile. [3]

E.albertii most closely resembles inactive E.coli, although they do not resemble the Alkalescens –Dispar group because of their ability to produce gas from D glucose. [3]

Escherichia species may be recovered from various sites of the body either as normal flora or as causative agents of variety of infections, meningitis, septicaemia etc. [5]

NLF strains of E.coli have been reported previously also. [6]

The present Enterobacteriaceae isolate was difficult to identify due atypical biochemical reactions. This isolate varied from the typical isolates in being nonlactose fermenting, and nonmotile.

E. coli strains identified by DNA relatedness showing biochemically atypical strains that are anaerogenic, lactose negative, indole negative and nonmotile have been reported. [4]

Amongst Inactive E.coli 5% are motile & 95% are nonmotile. [3]

Other tests for identification could not be done because of laboratory constraints.

Though atypical uropathogenic strains of inactive E.coli causing pyelonephritis are reported previously [7], in our lab we came across Inactive E.coli being associated with a case of Fournier’s gangrene. As similar isolate was obtained with similar antibiotic susceptibility pattern from other sample (Tissue) at same time, it can be said that it has pathogenic role in causing gangrene.

REFERENCES


