Pathogenic *Escherichia coli*: a public health inference

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Introduction:

Symbiotic natural microflora *Escherichia coli* harbours gastrointestinal tract of neonates from birth. Both bacteria and host provides benefit to each other and develops a symbiotic association between them. However in immunocompromised individual harmless *E.coli* can start infection. Although pathogenic *E.coli* infection may be confined to mucosal surface but sometimes causes mild to very severe infection. This facultative anaerobic gram negative bacilli is classified under *Enterobacteriaceae* family. In populous developing countries like India infectious diarrheal disease caused by *E.coli* is very common and can spread rapidly. Various clinical syndromes like urinary tract infection (UTI), sepsis or meningitis and enteric or diarrheal diseases may arise due to this bacterial infection. On the basis of antigenic properties and pathogenicity it is classified into different strains like enterotoxigenic *E.coli* (ETEC), enteropathogenic *E. coli* (EPEC), enteroinvasive *E. coli* (EIEC), enterohemoragic *E. coli* (EHEC), enteroaggregative *E. coli* (EAEC). *E.coli* serotyping is based on the surface antigen profile which includes 'O (somatic) antigen', H (flagella) antigen and K (capsule) antigen. Different *E.coli* serotype is on the basis of specific combination of O and H surface antigen. As this bacteria inhabits the colon or GI tract of human and endothermic animal, hence presence of *E.coli* in water is considered as contamination of water and not suitable for consumption (Jang et al 2017.,). Hence *E.coli* is a biological indicator of fecal contamination and mostly used to check water quality. *E.coli* associated UTI is extra intestinal, more frequent and prevalent in human population. Specific virulence factor of uropathogenic *E.coli* (UPEC) colonizes the lower urinary tract which results UTI. By forming biofilm, the bacterial surface protein adhesins attaches onto the urinary tract tissue and restrict the attack of neutrophils (John A S et al.,). This ubiquitously present bacteria is greatly concern now a days for public health perspective.

Overview on morphology:

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