

PROTEUS, PROVIDENCIA , Morganella

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Species - *P. Mirabilis*

- *P. Vulgaris*

- *P. Penneri*

Characteristics - gram -

- rod

- motile with peritrichous flagella

- non-spore forming

- non-encapsulated

- facultative anaerobic

- opportunistic pathogen

Reservoirs - humans (normal flora of the GI tract)

- water

- soil

Transmission - fecal-oral

- direct contact

- contaminated water

Toxins – LPS

Pathogenesis

Proteus species produce urease, resulting in rapid hydrolysis of urea with liberation of ammonia. Thus in urinary tract infections with *proteus* the urine becomes alkaline, promoting stone formation. The rapid motility of this bacteria may contribute to its invasion of the urinary tract. *P.vulgaris* is an important nosocomial pathogen.

Diseases - especially of young males & the elderly of both sexes, wound infections

- otitis media ,meningitis ,septicaemia , osteomyelitis , focal lesions of diabetic patients . bronchopneumonia

- cystitis and urolithiasis

- septicemia

Treatment – cephalosporins and aminoglycosides

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PROVIDENCIA

Species - *P. Stuartii*

- *P. Rettgeri*

- *P. Alcalifaciens*

Characteristics - same characteristics, reservoirs, transmission and toxins as Proteus

(see above, only differs in diseases and treatment, see below)

Diseases - gastroenteritis (see 1, primarily occurs in travelers)

- wound infections (primarily if burned)
- bronchopneumonia (primarily if intubated)
- cystitis (primarily if urinary catheter) and urolithiasis
- septicemia

Treatment – fluoroquinolones , tetracyclines

Morganella

Strains of *Morganella morganii* are motile & lactose-non-fermenting. They are urease positive, but they do not swarm on solid media. *M. morganii* is isolated from sputum, infected wounds & urine.

Serratia

Serratia marcescens: is a common opportunistic pathogen in hospitalized and narcotics addicts patients.

Characteristics :

- A free-living saprophyte
- Motility +
- Pink, red or magenta non diffusible pigment

Prodigiosin

- Has been found in RT and UT infections

Diseases:

- Meningitis, endocarditis, peritonitis, septicemia
- Nosocomial infections
- Multiple drug resistance to aminoglycosides and penicillins

Treatment : Third generation of cephalosporins