QUINOLONES

These are synthetic antimicrobials having a quinolone structure that are active primarily against gram-negative bacteria, though newer fluorinated compounds also inhibit gram-positive ones. The first member Nalidixic acid introduced in mid-1960s had usefulness limited to urinary and g.i. tract infections because of low potency, modest blood and tissue levels, limited spectrum and high frequency of bacterial resistance. at position 7 resulting in derivatives called fluoroquinolones with high potency, expanded spectrum, slow development of resistance, better tissue penetration and good tolerability.

Nalidixic acid

It is active against gram-negative bacteria, especially coliforms: E. coli, Proteus, Klebsiella, Enterobacter, Shigella but not Pseudomonas.

It acts by inhibiting bacterial DNA gyrase and is bactericidal. Resistance to nalidixic acid develops rather rapidly.

Nalidixic acid is absorbed orally, highly plasma protein bound and partly metabolized in liver: one of the metabolites is active. It is excreted in urine with a plasma t half -8 hrs. Adverse effectsThese are relatively infrequent, consist mostly of g.i. upset and rashes. Most important toxicity is neurological-headache, drowsiness, vertigo, visual disturbances, occasionally seizures (especially in children).

Use

1 . Nalidixic acid is primarily used as a urinary antiseptic, generally as a second line drug in recurrent cases or on the basis of sensitivity reports.

2. It has also been employed in diarrhoea caused by Proteus, E. coli, Shigella or Salmonella, and has special place in ampicillin resistant Shigella enteritis.

FLUOROQUINOLONES

These are quinolone antimicrobials having one or more fluorine substitutions. The 'first generation' fluoroquinolones (FQs) introduced in 1980s have one fluoro substitution. In the 1990s, compounds with additional fluoro and other substitutions have been developed-further extending antimicrobial activity to gram-positive cocci and anaerobes, and/ or confering metabolic stability (longer Ph). These are referred to as'second generation' FQs.

Norfloxacin

Ciprofloxacin

Lomefloxacin

Levofloxacin

Ofloxacin

Pefloxacin

Sparfloxacin

Gatifloxacin

Moxifloxacin