GENERAL PRINCIPLES OF CHEMOTHERAPY

Varsha Pendyala

- INTRODUCTION
- HISTORY OF CHEMOTHERAPY
- CLASSIFICATION OF ANTIBIOTICS
- CHOICE OF ANTIMICROBIAL AGENTS

INTRODUCTION

chemotherapy

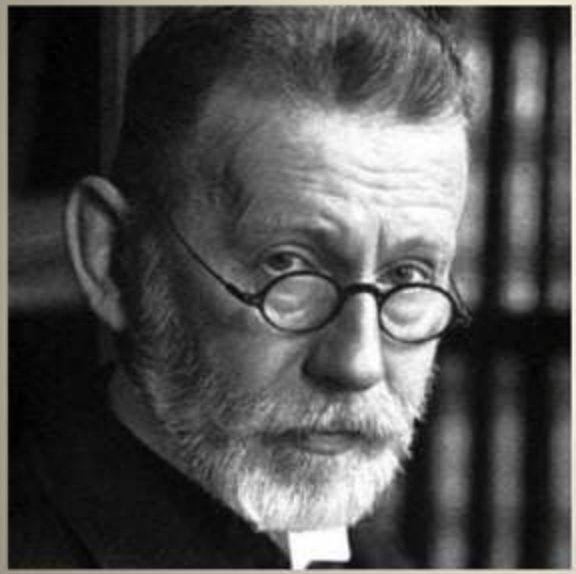
The term chemotherapy is defined as treatment of systemic or local infections caused by microorganism using chemotherapeutical agents

ANTIBIOTICS AND ANTIMICROBIALS

- ANTIBIOTICS: Antibiotics are the substance produced by microorganisms which selectively suppress the growth of or kill microorganisms at very low concentration.

- ANTIMICROBIALS: Any substance of natural synthetic and semi synthetic origin which at low concentration kills or inhibit the growth of microorganisms but cause little or no host damage

HISTORY OF CHEMOTHERAPY



- Paul ehrlich coined chemotherapy.
- He was well known as “FATHER OF MODERN CHEMOTHERAPY”.
- He was also awarded noble prize in contribution in the field of chemotherapy.

CLASSIFICATION OF ANTIBIOTICS

- Mechanism of action
- Chemical structure
- Spectrum of activity
- Type of organism
- Based on source

MECHANISM OF ACTION

- 1.Inhibition of cell wall synthesis –penicillin, cephalosporin.
- 2.Inbition of protein synthesis- Amino glycosides , tetracycline's.
- 3.Inhibition of DNA synthesis- fluroquinolones, sulfonamides.

CHEMICAL STRUCTURE

- 1.Beta lactam antibiotics-Penicilline, Cephalosporin's.
- 2.Sulfonamides-Sulfadiazine,Sulfone.
- 3.Quinolones-Ciprofloxacin,Norfloxacin
- 4.Tetracycline- Oxy tetracycline, Polypeptide antibiotics.
- 5.polypeptide antibiotics- Bacitracin, Polymycin-B

SPECTRUM OF ACTIVITY

Narrow Spectrum

Penicillin ,
erythromycin.

Effective against specific type of bacteria **either** gram positive **or** gram negative.

Broad Spectrum

Tetracycline's ,
Chloram phenicol

Effective against wide range of bacteria **both** gram positive **and** gram negative .

TYPE OF ORGANISM

- 1.Antibacterial Drugs- Penicillin , amino glycosides.
- 2.Antifungal Drugs- Amphotericin-B , ketocanazole.
- 3.Antiviral- Amantadine.

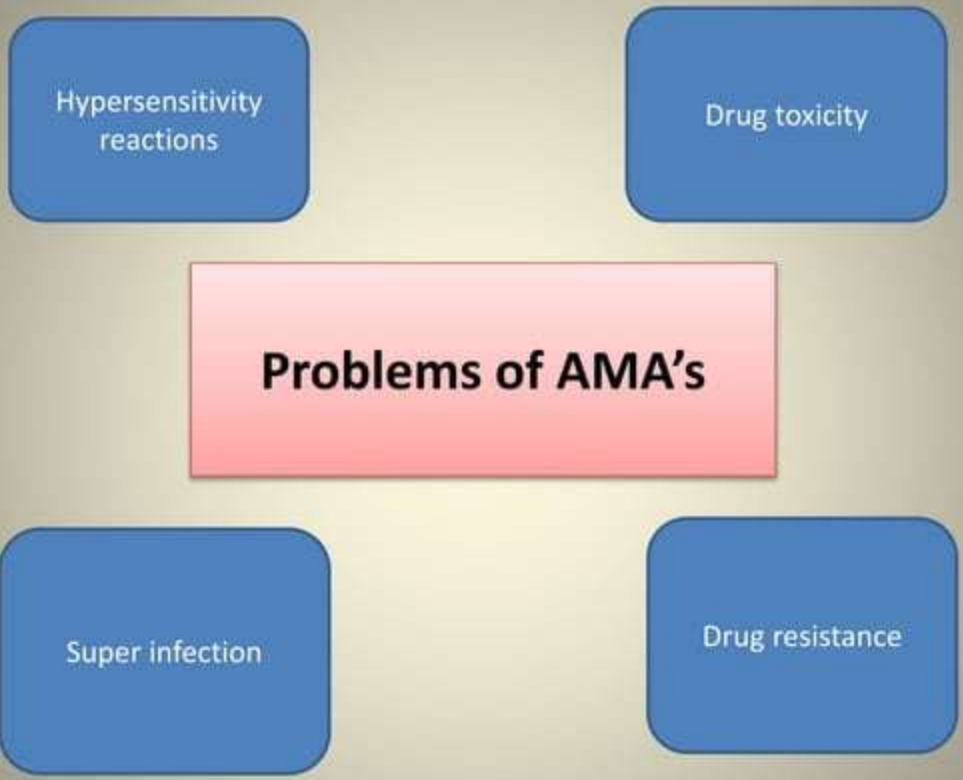
TYPE OF ACTION

BACTERIOSTATIC
Inhibit growth of micro organisms.
Tetracycline's sulfonamides.

BACTERICIDAL
Kills microbes
Penicillin's ,
amino glycosides

BASED ON SOURCE

- 1.Bacteria-Bacitracin , polymyxin-B.
- 2. Fungi- penicillin's , cephalosporin's.
- 3. Actinomycete - Aminoglycosides , tetracycline's.


Hypersensitivity reactions
Drug toxicity
Problems of AMA's
Super infection
Drug resistance

CHOICE OF ANTIMICROBIAL AGENT

Patient related factor

Drug factor

DRUG FACTORS

- Nature of the drug
- Spectrum of activity
- Toxicity
- Cost
- Route of administration
- Pharmacokinetic profile

FAILURES OF CHEMOTHERAPY

- Repetitive use of antibiotics leads to mutation and development of resistance to micro organisms.
- Improper selection of antibiotics , dosage , route of administration and duration of therapy also results in failure.
- Late initiation of treatment.

PATIENT RELATED FACTOR

- Patient age- chloramphenicol produces gray baby syndrome in new born baby.
- Renal and hepatic function- aminoglycosides produce renal failure. Erythromycin and tetracyclin for liver failure.
- Pregnancy- All AMAs should avoid in pregnancy because risk to the fetus. erythromycins, penicillin's and cephalosporin's are safe while all other drugs poses risk.

THANK YOU