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**Антисептика**

**ANTISEPSIS**

# **ANTISEPSIS -**

**the measures to exclusion or destruction of harmful microbes are generally called antiseptics.**

# **There are four types of antiseptics:**

**1. Mechanical,**

**2. Physical,**

**3. Chemical,**

**4. Biological.**

# **Mechanical antisepsis**

**is based on surgical debridement of wounds. This is performed in the surgical theatre and involves excision of the edges, walls and the floor of wounds to remove the non-viable tissue and microorganisms within the wound. It is the major method to treat accidental infected wounds.**

# **Physical antiseptics**

**starts from the law of capillarity,  
hygroscopicity, diffusion,  
osmosis, siphoning, ultrasound  
and laser effects.**

# **Physical antisepsis used:**

- **To enhance drainage from wounds and pus from abscesses and empyemas,**
- **to facilitate flow to the outside (into a dressing or a special container with antiseptic solution).**

**Wounds can also be drained by using plastic, vinylchloride or other tubes of different diameters, which are placed in the wounds, abscess cavity, joints (in purulent arthritis), pleura (in purulent pleuritis), abdominal cavity (in purulent peritonitis).**

**The drain can be connected by a tube to a container with an antiseptic; thus the secretions empty into the container which prevents pollution of the dressing.**

# **Chemical antiseptics**

- **Synthetic antibacterial agents are used to combat bacterial infection in the wound or inflammatory foci. These are both effective for therapy and prophylaxis and help achieve antibacterial effect inside the human body.**

# Derivatives of nitrofuran.

- *Furacilin*

Aqueous solution (1:5000) is used for washing out purulent wounds during dressing, washing out abscess cavities and empyemas through the drainage tube

- *Soluble Furagin* (Furagin K- or Furagin-potassium, Solafur)

The indications of its 0,1% solution are similar to those of furacilin

# **Acid group**

**For washing wounds, purulent cavities and purulent fistulae, 2-3% aqueous solution of boric acid is used.**

# Oxidants

- This group involves hydrogen peroxide and potassium permanganate, which, if combined with organic compounds, discharge atoms of oxygen, which cause antimicrobial effect.

# Dyes

- - *Brilliant green* is used as a 1—2% alcohol solution for superficial wounds, abrasions and suppurative skin infections.
- — *Methylene blue* is used for superficial wounds and abrasions (3% alcohol solution), burns (1-2% alcohol solution) and for washing purulent cavities (0,02% aqueous solution).

# Detergents

- *Chlorhexidine*. The main aqueous solution contains 20% of chlorhexidine bigluconate. For cleaning wounds, a 1:400 solution is available, for washing infected bodily cavities a 1:1000 may be used.

# 5-Nitro-imidazole derivatives

- ***Metronidazole***; trade names - flagyl, trichopol, clion.

It is effective against non-clostridial anaerobes and can be given intravenously (0,5 g in 100 ml of solvent).

- ***Dioxydin***. This is a derivative of oxychinolin. 0,1— 1% aqueous solutions are indicated for purulent wounds, for washing the urinary bladder, empyema or abscess cavities, and purulent fistulae

# Heavy metal salts

- *Silver nitrate* is used as 0,1-0,2% solutions for washing wounds and purulent cavities.
- *Sulphonamides* (streptocide, ethazol, sulfacyl)

Derivatives of sulfacyl with prolonged activity (sulfadimethoxin, sulfalen, sulfapiridazin) are available as tablets.

# **Topical chemotherapy involves:**

**application of antiseptics to dressing materials for wounds and burns, or application of antibacterial solutions directly into the wound.**

# **Systemic chemotherapy includes:**

- a) oral use of antibacterial agents; tablets of Furagin, Solafur,**
- b) intravenous use of chemotherapeutic compounds: e.g. soluble furagin, dioxidin.**

# Biological antiseptics

- **Antibiotics**
- **Proteolytic enzymes**
- **Immune compounds**

# Antibiotics

- **penicillins (benzylpenicillin)**
  - 1) stable penicillins (oxacillin, metycillin, dicloxacillin),**
  - 2) broad-spectrum semisynthetic penicillins (ampicillin; ampiox - a combination of ampicillin and oxacillin; carbenicillin).**

## ● Cephalosporins

**First- and second-generation cephalosporins include ceforin (cephaloridin), kefzol (cefazolin), cephalothin, and cephalexin; cephataxime, cefotaxim, ceftriaxon are third-generation cephalosporins, and cephipirom (Quiten) belongs to fourth-generation cephalosporins.**

- **Aminoglycosides**

**These include gentamicin, kanamycin, tobramycin and semisynthetic aminoglycoside (amikacin).**

- **Tetracyclines**

**These include tetracycline, oxytetracycline and semisynthetic tetracyclines (metacycline or rondo mycin), doxycycline (vibramycin).**

- **Macrolides**

**These include erythromycin,  
oleandomycin, azithromycin.**

- **Fluorquinolones**  
**(ofloxacin, pefloxacin,  
ciprofloxacin, lomefloxacin)**

# **Proteolytic enzymes**

- **can dissolve (lyse) necrotic tissues, fibrin, pus, prevent oedema and enhance the therapeutic effect of antibiotics. The currently used proteolytic enzymes of animal origin are trypsin, chymotrypsin, chymopsin, ribonuclease; those of bacterial origin - terrilitin, streptokinase, collagenase, asperase, ribonuclease, iroxol.**

# Immune compounds

- **Anatoxins** (*Staphylococcal anatoxins, Tetanus antitoxin*)
- **Hyperimmune plasma**  
(*Antistaphylococcal*)
- **Gamma globulin**  
(*Antistaphylococcal, Antitetanus*)
- **Serum** (*Antigangrene, Antitetanus*).