NORMAL FLORA

LECTURE NUMBER:2

Lecture objectives :

1. Define the terms: *Normal Flora, Resident flora, Transient flora* and carrier state
2. Know the origin of normal flora.
3. Know the importance of normal flora with examples, including importance as:
   Source of opportunistic infection.
   Immunostimulation.
   Nutrition: Vitamins production.
   Production of Carcinogens.
   Protection against external invaders
1. Know areas of the body with normal flora (GIT, Urogenital tract, and skin) and most common types of organism in these areas and relation to pathogenicity of these organism.
2. Know sites of the body with no normal flora e.g. sterile body sites and the importance of this fact in relation to interpretation of culture results.

Guide :

green:example

Red : important

Grey : explanation

- Normal flora are microorganisms that are frequently found in a particular site in normal healthy individual and has Symbolic relationship with the host, they are mostly bacteria and it doesn't cause any illness
- **Normal flora is divided into different types:**

- *Commensals*: natural relationship with host.
- *Residents* : present for invariable period .
- *Transients* : establish itself briefly , excluded by host defence or competition from residents.
- *Carrier state* : potentially pathogenic , eg. S.pneumoniae, N. meningetidis in throat of healthy individual.

- ***Origin of Normal Flora:***
- Newborn sterile in uteroand. After birth, it will be exposed to many sources of normal flora Ex: mother's genital tract and skin.

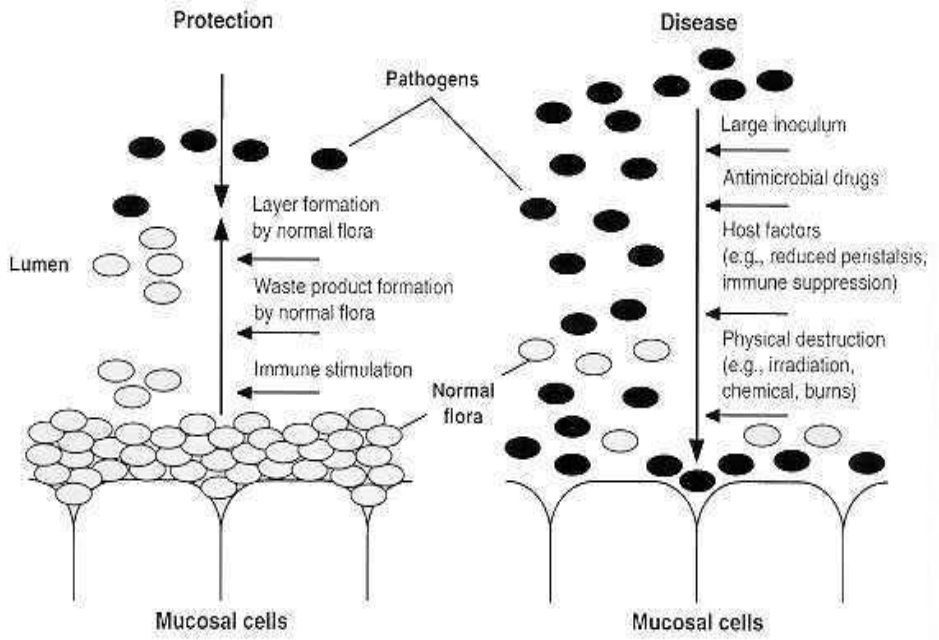
Beneficial effects of normal flora:

•1- Immunostimulation (antibody development)

•2- Exclusionary effect (vacuum effect) and protection from external invaders..

•3-Production of essential nutrients (vit. K & B) by some normal intestinal flora eg. *E.coli*.

This picture shows the exclusionary effect >



In the other hand normal flora has some harmful effects:

Source of opportunistic infections: Ex: Staphylococcus epidermidis

Reaction with normal tissue components: Ex: the reaction between intestinal flora and the antigens of A&B blood substances.

Production of carcinogens: Some normal flora may be modify through their enzymes chemicals in our diets. Ex: Artificial Sweeteners.

- ***Distribution of normal flora:***

- Internal organs (except alimentary tract) are sterile at health.
- Sterility maintained by :
- ~ local defence mechanisms
- ~ chemical substances in serum & tissues eg. Complement , antibodies.
- ~phagocytic activity of PMN

- ***Areas of the body with normal flora:***
- GIT: mouth & large colon
- Urogenital tract: vagina & distal 1/3 of the urethra
- Skin
- Respiratory tract
- Genital tract
- External auditory meatus. **Ex**: Staphylococcus epidermidis, **AFB** (**A**cid **F**ast **B**acilli) which Occasionally found in *ear wax*.

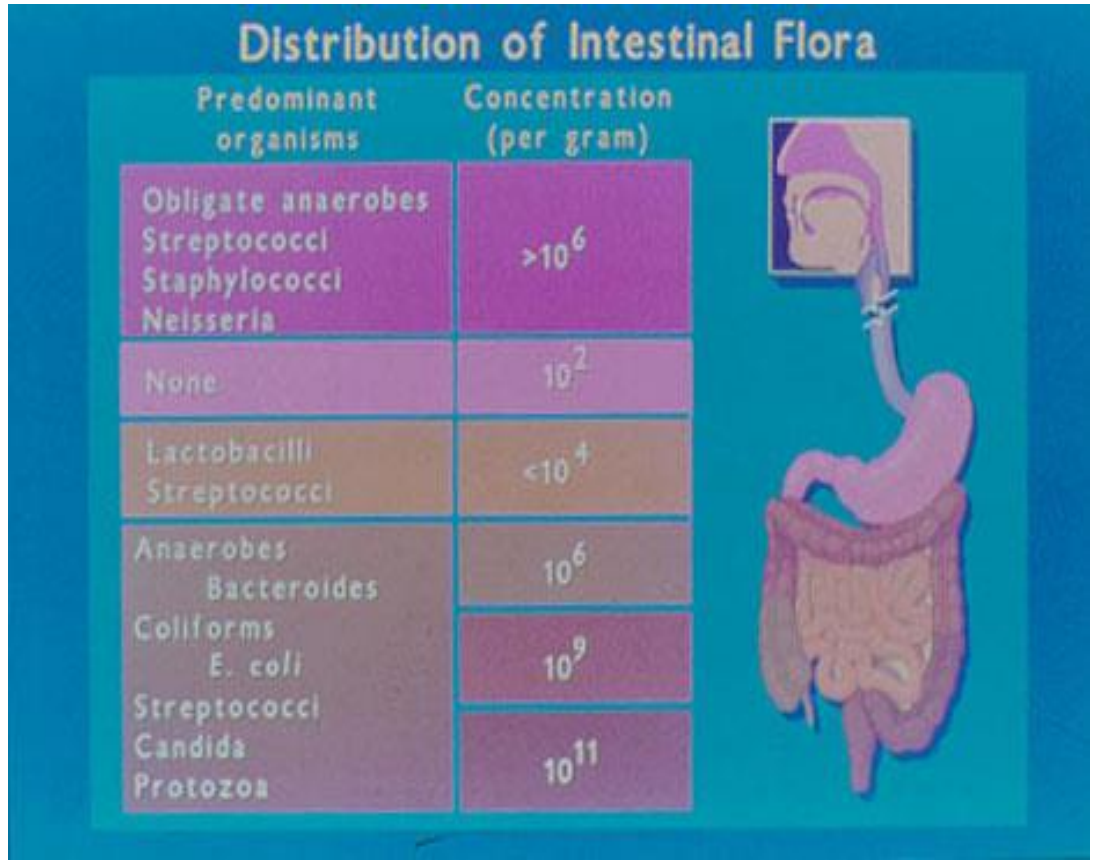
Respiratory tract flora:

- **Lower** respiratory tract is STERILE.
- **Nose normal flora**: Ex: Staphylococcus epidermidis, *Staph. Aureus, Corynebacteria*
- **Oropharynx flora**: Ex: Veillonella, actinomyces, *S.pyogenes ,N.meningitidis* .

Gastrointestinal tract flora:

- **Large intestine** heavily colonized by bacteria.
- Empty stomach sterile due to **gastric acid**.
- Oesophagus flora as **pharyngeal flora.**
- 1/3 of stool weight is anaerobes bacteria, mainly dead.

99% anaerobes



Genital tract flora:

- **Female genital** tract is heavily colonized by *bacteria* because of the **vaginal secretion**.
- **Male & Female** distal urethra is considered as skin so it has - S.epidermidis - corynebacterium -Mycoplasma.
- ***Female vagina flora***: Ex: **Lactobacilli** it is important to maintain the PH of the vagina.

Skin flora:

Skin has rich resident bacterial flora($10^4/cm^2$).

Moist skin ,often colonized by *coliforms*.

Ex:S.epidermidis,Corynebacteria,S. aureus

N.B: **SKIN FLORA** is considered as *potential pathogens*


Normal Flora
Types of normal flora
Transients
Commensals
Residents
Carrier State
Ex: Streptococcus Preumoniae
Origin of normal flora
Newborn sterile in utero
After birth, Exposed to different sources of flora
Beneficial effects of normal flora
Exclusionary effect
Immunostimulation
Production of essential nutrients
Ex: Eschericia Coli
Harmful effects of normal flora
Reaction with normal tissue components
Ex: Antibodies to ABO group
Source of opportunistic infections
Ex: Eschericia Coli
Production of carcinogens
Ex: Artificial Sweeteners
Areas of the body with normal flora
Respiratory tract
Nose
Ex: Staphyclococcus epidermidis
Oropharynx
Ex: Viridance Streptococci
Gastrointestinal tract
Ex: Bacteroids fragilis in large intestine
Genital tract
Ex: Lactobacilli in female vagina
Skin
Ex: S.epidermidis
External auditory meatus
Ex: AFB in ear was

MCQs :

1.Which type of normal flora is potentially pathogenic?
a)Carrier state b) Residents c) Commensals d) Transient
2.Staphylococcus epidermidis are found in:
a) Female Vulva b) Skin c) Upper respiratory tract d) all of the above
3…….. is a source of opportunistic infection.
a) Antibodies b) Eschericia Coli c) Bacteroids Fragillis d) Corynebacteria
4.Internal organs except alimentary tract are sterile at health.
a) T b)F
5)Normal flora originates from :
a)Mothers genitals b) People handling the child c)Outside environment
d)all of the above

MCQ cont.

6)…….. is important to maintain the PH of vagina.

a) S.epidermidis b) E.coli c) Lactobacilli d) none of the above

7)The stomach is mostly sterile because of :

a)Bile b)digestive enzymes c)antibodies d)high acidity

8)Which of these bacterium is found in the nasal cavity

a) Corynebacteria b) S.faecalis c) lactobacilli d) Anaerobic cocci

9)

Thank you

DONE BY:

- Abdulaziz Almanie
- Dhaherah Aljohani
- Nasser Alqahtani
- Osama Abdulqadir
- Mohammed Alrowait
- Saeed Nassar
- Abdulaziz Alnoebt
- Faras Alsowaidaa
- Alwalid Alburaik