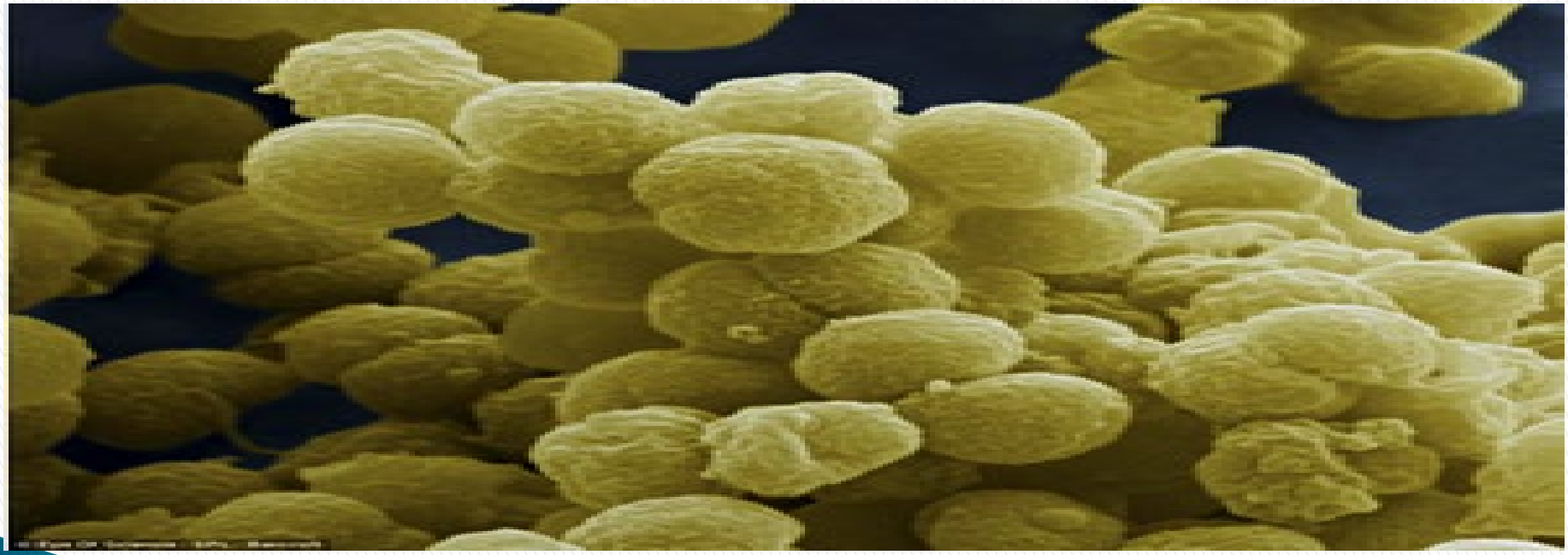

In the name of God

Genus Neisseriae



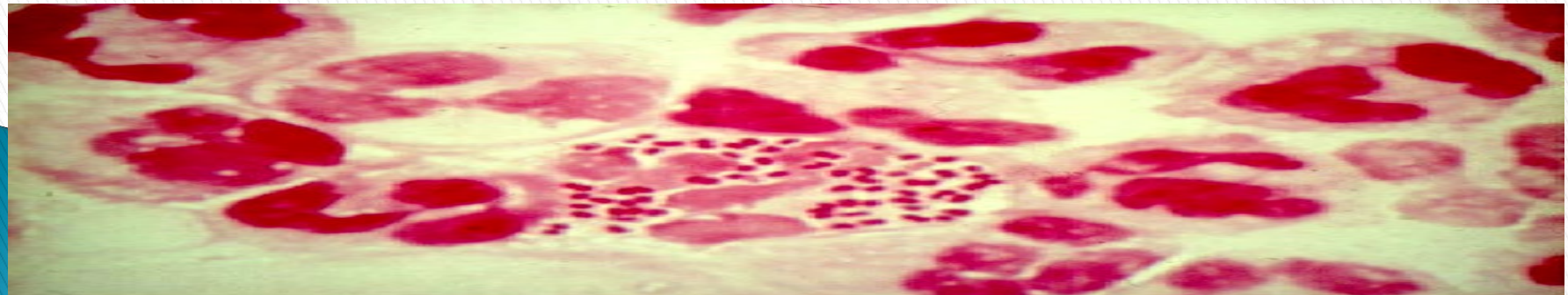
.Dr.Rasha jasim Alwarid

The Neisseria species are

Neisseria gonorrhea “gonococci”

Neisseria meningitidis “meningococci”

are pathogenic for human and typically are found associated with or inside polymorpho nuclear leukocytes (PNL).



- **The Neisseriae are** :
- Human pathogens

- **Neisseria gonorrhea (gonococcus**) causes gonorrhea
- ,neonatal conjunctivitis (ophthalmia neonatorum)
- pelvic inflammatory disease (PID).

- Neisseria meningitidis (meningococcus) cause acute meningitis.

or subacute septicemia with petechial rash

Morphology and Identification

Typical organisms: they are
Gram negative,
cocci
non motile,
non spore forming
diplococcus, 0.8 µm in diameter, and kidney in shape, arranged in pairs.

Culture: in 48 hours on enriched medium gonococci and meningococci form convex elevated mucoid colonies 1-5 mm in diameter colony are opaque, non pigmented and non hemolytic. The non pathogenic spp. can grow in simple media while the pathogenic spp. need enriched media e.g (blood and chocolate agar) selective media for Neisseria called (Modified Thyer martin agar).

Growth characteristics: Neisseria Grow best under aerobic conditions Ferments carbohydrates producing acid but not gas,

Give +ve oxidase test.

The microorganism are rapidly killed by drying, sunlight and many disinfectants

Pathogenesis:

N. Meningitidis can be the cause of three major diseases. These three are nasopharyngitis, meningococcal septicemia, and meningococcal meningitis. Nasopharyngitis is usually a very short illness and sometimes there aren't even any symptoms. It is found because it will occur before Meningococcal Septicemia. If the *N. Meningitidis* bacteria colonize in the nasopharynx and spread into the blood stream, the disease becomes known as Meningococcal Septicemia.

This disease has many symptoms including

high fever,

rash,

arthritis,

Problems with blood flow usually result in skin lesions that look like dark red or purple splotches all over the body.

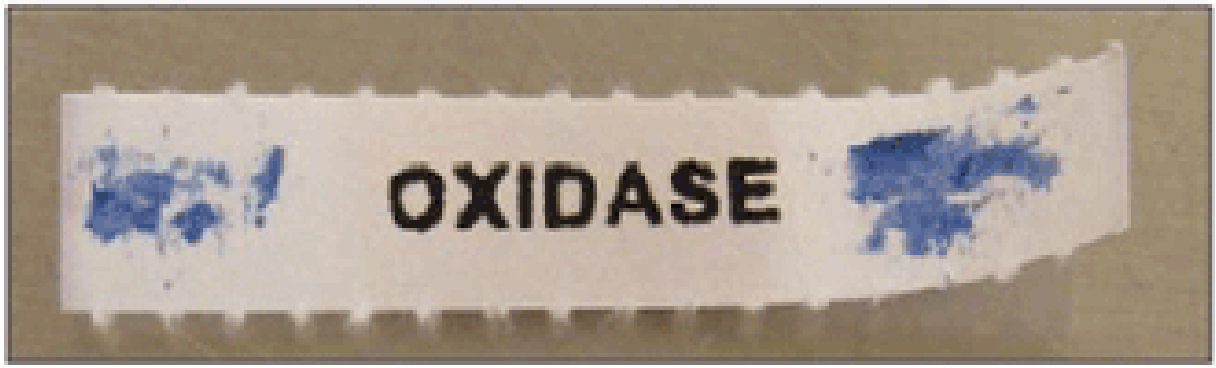
The bacteria affect the adrenal glands and adrenal insufficiency quickly leads to death.

The most common disease caused by *Neisseria Meningitidis* is Meningococcal Meningitis or more commonly known as bacterial meningitis

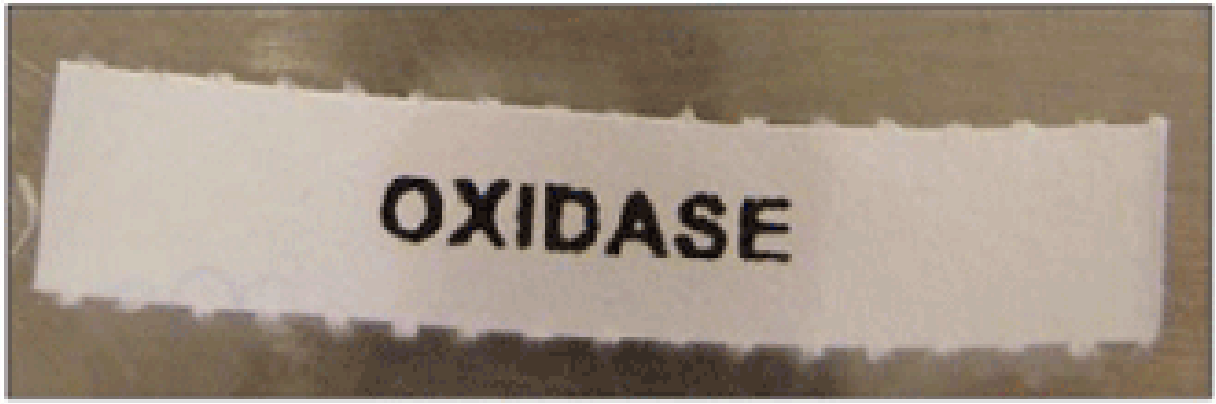
Neisseria Meningitidis will attach to the microvilli of nonciliated columnar epithelial cells that reside in the nasal region of humans. The bacteria are able to multiply and form a colony because of its ability to acquire iron from the host. then are able to invade the mucous membrane that lines the nasopharnyx.

DIAGNOSIS

- The gold standard of diagnosis is isolation of *N. meningitidis* from sterile body fluid. A cerebrospinal fluid (CSF) specimen is sent to the laboratory immediately for identification of the organism.
- Diagnosis relies on culturing the organism on a chocolate agar plate.
- Further testing to differentiate the species includes testing for oxidase, catalase (all clinically relevant *Neisseria* show a positive reaction) .



Oxidase positive



Oxidase negative

- Serology determines the subgroup of the organism.
- Polymerase chain reaction tests can be used to identify the organism even after antibiotics have begun to reduce the infection. As the disease has a fatality risk approaching 15% within 12 hours of infection, it is crucial to initiate testing as quickly as possible but not to wait for the results before initiating antibiotic therapy.

Treatment

i. *N. Meningitidis* are sensitive to penicillin , penicillin G in high doses .

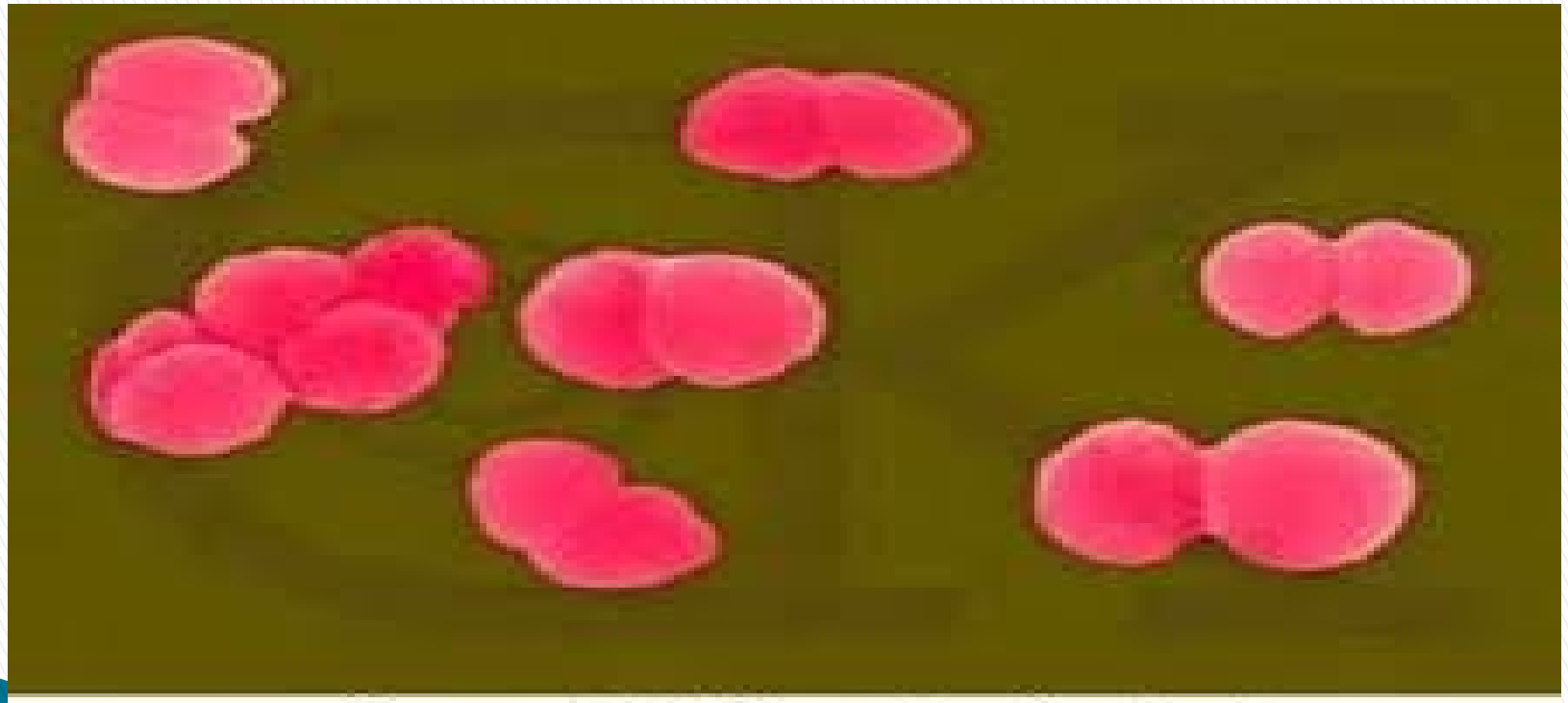
ii. In penicillin sensitive individuals ,chloramphenicol as an alternative to therapy

iii. Cefotaxime or Ceftriaxone

At the end of course of therapy with pencillin it is important to give eradicative treatment with rifampicin or ciprofloxacin ,because penicillin dose not eradicate *N. Meningitidis* from the nasopharynx and patient returning home as a carrier may infect others .

- **Prevention:**
- 1) Irradication of the carrier states (major source).
- 2) Isolation of the patient.
- 3) Chemoprophylaxis for contact people.
- 4) Vaccination.

Neisseria gonorrhea



Neisseria gonorrhea
Disease

i. Gonorrhea

ii. Disseminated gonococcal infection (DGI)

- Spread from the genitourinary tract, rectum or pharynx to the blood stream

iii. Pharyngitis

- Oral infection

iv. Gonococcal ophthalmia neonatorum

- Conjunctiva infection in the newborn

Pathogenesis

Neisseria gonorrhoeae are usually affect the mucous membranes of the urethra in males and the endocervix and urethra in females, although the infection may disseminate to a variety of tissues.

The pathogenic mechanism involves the attachment of the bacterium to nonciliated epithelial cells via pili and the production of lipopolysaccharide endotoxin. is highly toxic, and it has an additional virulence factor in the form of its antiphagocytic capsule

Diagnosis

The clinical syndromes associated with *N. gonorrhoeae* are typically diagnosed by history and physical examination,

- . In general, nucleic acid amplification testing (NAAT) is the test of choice for the microbiologic diagnosis of *N. gonorrhoeae* infection,
- Culture remains an important diagnostic tool when antibiotic resistance is suspected.

If NAAT methods are unavailable, microscopy (for men),

- culture,
- antigen detection
- genetic probe methods can be used with endocervical or urethral swabs to diagnose urogenital gonorrhea.

TREATMENT

Drug of choice is broad spectrum cephalosporins – ceftriaxone or cefixime

- Most patients treated with antibiotics for possible co-infections with *Chlamydia*.
- Eye treatments for infants with 1 hour of delivery.


THANKS