**NIESSERIA :**

* **Gram negative coccus often diplococcic with adjacent sides flattened /aerobic /oxidase ,catalase positive /nonmotile /acid from oxidation of carbs not from fermentation**
* **Niesseria gonorrhea (gonococcus) : (ophthalmia neonatorum )**

**\*Disease :cervicitis +salpingitis + pelvic inflammatory disease + proclitis + conjunctivitis + pharyngitis +arithritis+urithriti**

**\*Epidemiology of gonococcus : Transmitted by sexual contact**

**\*Require complex media**

**\*Fastidious, Capnophilic and susceptible to( cool temperatures, drying and fatty acids)**

**\*Produce acid from glucose, but not from other sugars**

**\*Found only in human**

**\*Asymptomatic carriage is major reservoir**

**\*Lack of protective immunity and therefore reinfection, partly due to antigenic diversity of strains**

**\*Higher risk of disseminated disease in patients with complement deficiencies**

**\*DIFFERENCES: in men -> 20% risk of infection / Urethritis; Epididymitis / acute and symptomatic / purulent discharge & dysuria after 2-5 day incubation period /** **The two bacterial agents primarily responsible for urethritis among men are N. gonorrhoeae and Chlamydia trachomatis / rare complications: epididymitis, prostatitis, periurethral abscesses / disseminated very rare / common in homosexual men**

 **In women-> 50% risk of infection + Cervicitis + Vaginitis+ urethra + rectum + Pelvic Inflammatory Disease (PID) asymptomatic – difficult diagnosis -** **cause scarring of fallopian tubes leads to infertility +; Disseminated Gonococcal Infection (DGI): skin lesion + Petechiae (small, purplish, hemorrhagic spots) + Pustules on extremities + Arthralgias (pain in joints) + Tenosynovitis (inflammation of tendon sheath) +** **Septic arthritis + Hepatitis+ Rarely endocarditis or meningitis / asymptomatic / untreated until PID complications develop /Ascending infections: salpingitis, tubo-ovarian abscesses,PID , sterility / Disseminated infections (common) : septicemia, infection of skin and joints (1-3%) / affect infant at delivery .**

**\*PATHOGENISIS : 1-** **Fimbriated cells to attach mucus epithelium**

**2-** **Capacity to invade intact mucus membranes or skin with abrasions : Adherence + penetration + infection in the sub-epithelial layer**

**\*Most common sites of inoculation: • Cervix (cervicitis) or vagina in the female**

 **• Urethra (urethritis) or penis in the male**

**\*Virulence factors : الجدول**

**---------🡪BOTH (gonorrhea + meningitis)---🡪 bacteremia + urethritis + arithritis**

* **Niesseia meningitides :**

**\*Disease start** f**rom nasopharynix to :meningitis + meningoensephalitis + pneumonia +** **Septicemia**

 **\* Encapsulated**

**\*Second most common cause (behind S. pneumoniae) of community-acquired meningitis in healthy adults**

**\*Pathogenicity: 1- Pili-mediated**

 **2- Antiphagocytic polysaccharide capsule allows systemic spread**

 **3- Toxic effects mediated by lipooligosaccharide**

**\*Serogroups A, B, C, Y, W135 account 90% of all infections**

**\*Epidemiology:1- human natural hosts**

**2-** **Person-to-person transmission**

**3-** **Close contact**

**\*Highest incidence in children less than1-5 years**

**\*colonize nasopharynx**

**\*Pathogenisis: 1-** **Specific receptors (GD1 ganglioside) on epithelial cells in nasopharynx**

**2- internalized into phagocytic vacuoles, avoid intracellular killing**

**3-** **Replicate intracellularly and migrate to subepithelial spac**

**4-** **production of endotoxin (lipid A of LOS)**

**\*Skin Lesions of Meningococcemia : petechiae + hemorrhagic bullae**

**\*Laboratory characteristic : 1- Large numbers of encapsulated, small, gram-negative diplococci and PMN’s can be seen microscopically in (CSF)**

**2- Transparent, non-pigmented nonhemolytic colonies on chocolate blood agar with enhanced growth in moist atmosphere with 5% CO2**

**3-** **Oxidase-positive**

**4- a new quadrivalent conjugate vaccine against serogroups A, C, W-135, and Y, is currently available**

* **Others : opportunistic infections**