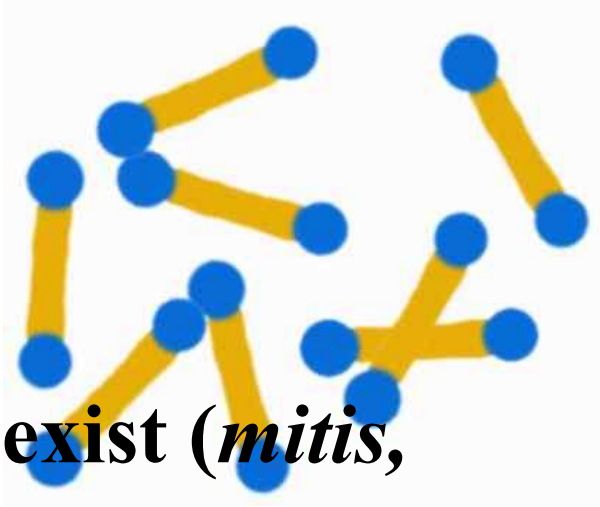
THE DISEASES WITH TONSILITIS

DIPHTHERIA AND INFECTIOUS MONONUCLEOSIS

DIPHTHERIA

An acute, contagious disease caused by Corynebacterium diphtheriae, characterized by the formation of a fibrinous pseudomembrane, usually on the respiratory mucosa, and by myocardial and neural tissue damage secondary to an exotoxin

Etiology



- **Three biotypes of *C. diphtheriae* exist (*mitis*, *intermedius*, and *gravis*)**
- **Only toxinogenic isolates produce exotoxin**
- **Nontoxinogenic isolates may produce symptomatic diphtheria, but the clinical course is usually milder**

Epidemiology

- Humans are the only known ***reservoir*** for *C. diphtheriae*
- ***Spread*** is chiefly by the secretions of infected persons, directly or via contaminated formats
- ***Sporadic cases*** generally result from exposure to carriers who may never have had apparent disease
- Infection can occur in ***immunized persons*** and is most common and severe in those partially immunized
- ***Cutaneous diphtheria*** can occur when disruption of the integument is colonized by *C.diphtheriae*

Pathogenesis

- the microorganisms ***lodge*** in the tonsil or nasopharynx, and multiply toxinogenic *C. diphtheriae* with ***produce exotoxins*** lethal to the adjacent host cells
- The ***diphtheria bacillus*** first destroys a layer of superficial epithelium, usually in patches, and the resulting exudates coagulates to form a ***grayish pseudomembrane containing bacteria, fibrin, leukocytes, and necrotic epithelial cells***

Pathogenesis

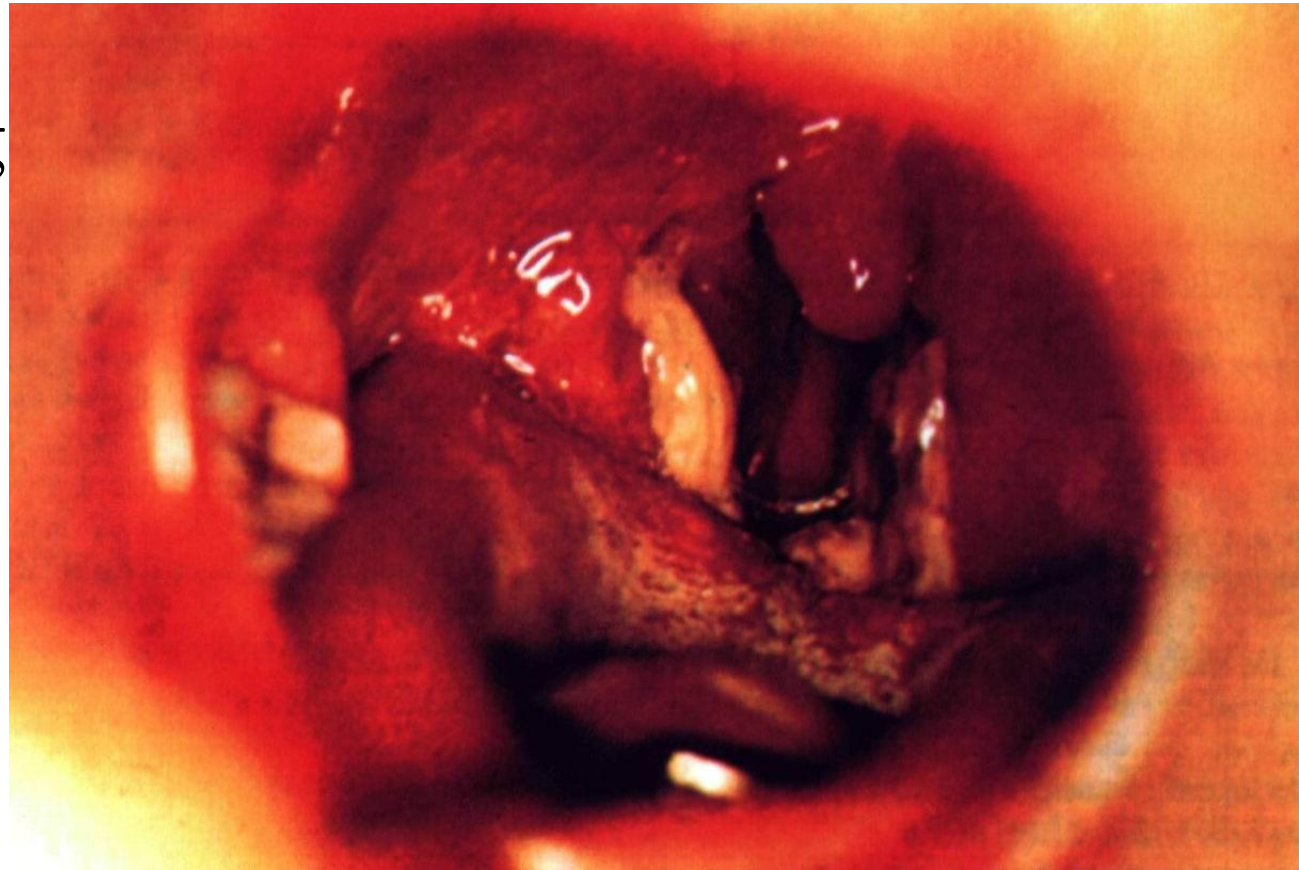
- exotoxin, ***carried by the blood*** damages cells in distant organs, creating pathologic lesions in the respiratory passages, oropharynx, myocardium, nervous system, and kidneys
- The ***myocardium*** may show fatty degeneration or fibrosis
- Degenerative changes ***in peripheral nerves*** occur chiefly in the motor fibers
- ***The kidneys*** may show a reversible interstitial nephritis with extensive cellular infiltration

Symptoms and Signs

- The ***incubation period*** ranges between 1 and 4 days
- ***Initially***, the patient with tonsil diphtheria has only a mild sore throat, dysphagia, a low-grade fever, increased heart rate, and rising polymorph nuclear leukocytosis
- Nausea, emesis, chills, headache, and fever are more common in ***children***

The characteristic membrane

- usually found in the tonsil area but sometimes in other areas (the nasopharynx)
- gray, tough, and fibrinous and may adhere firmly so that removal causes bleeding
- the membrane may be punctuate or extensive and yellow-gray or creamy



Symptoms and Signs

- When ***disease progresses***, dysphagia, toxemia, and prostration are prominent
- The cervical ***lymph glands*** are enlarged.
- Pharyngeal and laryngeal ***edemas obstruct breathing***
- If the larynx or the trachea and bronchi are involved, ***the membrane may partially obstruct the airway*** or suddenly death, causing complete obstruction

- In severe cases, exotoxin may diffuse into the neck tissue, ***producing severe edema*** (bull neck).
- The lesions of ***cutaneous diphtheria*** are not morphologically specific. Rarely, *diphtheriae* causes ocular infection, with or without cutaneous lesions

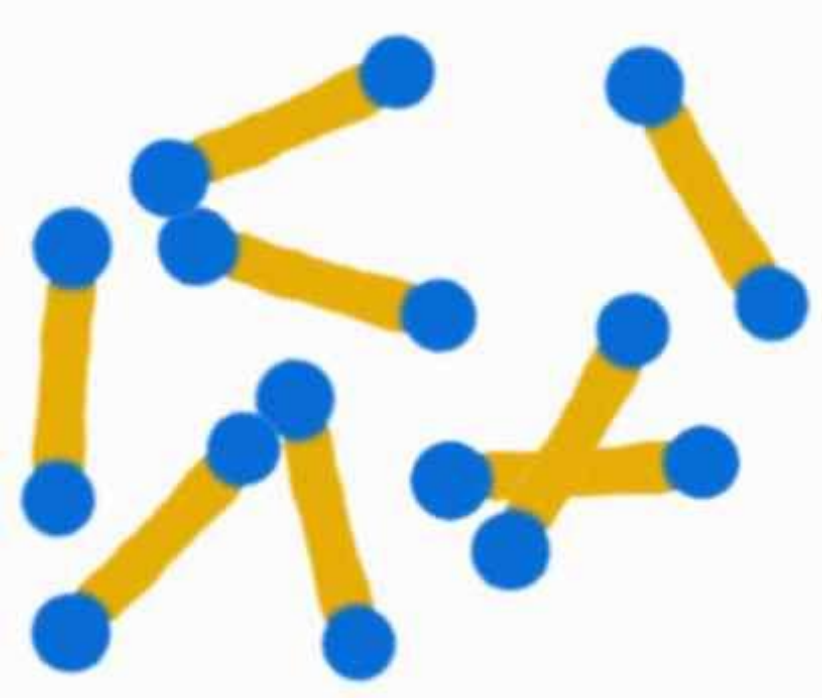
Complications

Severe complications are likely if antitoxin is not given promptly on the basis of clinical diagnosis, even before culture results are available

- ***Myocarditis*** - atrioventricular dissociation, complete heart block, and ventricular arrhythmias - usually evident by the 10th to 14th day but can appear any time during the 1st to 6th wk. Heart failure may follow; sudden death may occur.
- Dysphagia and nasal regurgitation, from ***bulbar paralysis***, may occur in the 1st wk of illness
- ***Peripheral nerve*** palsies appear from the 3rd to 6th wk.

Diagnosis

- The ***clinical appearance*** of the membrane suggests the diagnosis, pending confirmation by ***culture***
- Gram stain of the membrane may reveal ***gram-positive*** bacilli with metachromatic staining in typical



Diagnosis

- ***Material for culture*** should be obtained from below the membrane, or a portion of membrane itself should be submitted
- Loeffler's medium or tellurite agar is preferred for primary isolation of the organism

Treatment

Diphtheria antitoxin must be given early, since the antitoxin neutralizes only toxin not yet bound to cells!

Caution: ***Diphtheria antitoxin is derived from horses; hence, a skin test to rule out sensitivity should always precede administration***

- The first doze must be given 0,1 ml intraskin in solution 1:100
- After 20 minutes, you must meter erythema and papule
- If it smaller then 10 mm in diameter you must 0,1 ml antitoxin subdermaly

Administered antitoxin

After 20 minutes, you must meter papule too, and if it smaller then 10 mm ***should be administered***

An urticarial wheal in response to the skin test ***indicates sensitivity***. The patient must be desensitized with dilute antitoxin in graduated doses

The dose of the antitoxin

ranging from 20,000 to 100,000 U, is determined empirically

- ***symptomatic diphtheritic pharyngitis*** require 20,000 to 40,000 U
- for ***mild cases*** antitoxin have to given 40,000 U
- ***moderate cases*** –

  80,000 U
- ***severe cases*** –

  120,000 U

Antimicrobial treatment

is required to eradicate the organism and prevent spread; it is not a substitute for antitoxin!

- Adults and children ***may be given*** penicillin G, erythromycin, ceftriakson, cefasolin 6 for 14 days
- Elimination of organism ***should be documented*** by two consecutive negative throat cultures after 2 days for completion of antimicrobial treatment

Recovery from severe diphtheria is slow, and patients must be advised against resuming activities too soon

Prophylaxis

- ***Active immunization*** with diphtheria-tetanus-pertussis (DTP) vaccine should be routinely given to all children and all susceptible contacts
- For previously immunized contacts, a ***booster dose*** of adult-type tetanus and diphtheria toxins, adsorbed (Td), is sufficient
- Symptomatic patients should be ***hospitalized*** in infection hospital

Management of an Outbreak

- All symptomatic patients ***should be isolated***
- ***Contact precautions*** (private room, use of gloves at all times, hand washing with an antibacterial agent, gowns worn at all times) are also recommended
- Nasopharyngeal and throat cultures for *C. diphtheriae* should be obtained for ***all close contacts***
- Asymptomatic contacts with positive throat cultures for *C. diphtheriae* (Carriers) should be hospitalization for the duration of therapy, and given erythromycin or rifampicin 6 days
- Cultures should be rechecked at a minimum of 2 day after completion of antimicrobials

INFECTIOUS MONONUCLEOSIS

is an acute disease which, characterized by fever, pharyngitis, and lymphadenopathy and cause Epstein-Barr virus

Etiology and Pathophysiology

- ***Epstein-Barr virus (EBV)*** is a herpesvirus with a host range limited primarily to B-lymphocytes and nasopharyngeal cells of humans and certain nonhuman primates
- After initial replication in the nasopharynx, the virus infects B-***lymphocytes***, which are induced to secrete immunoglobulin
- The ***EBV-transformed B-lymphocytes*** are the target of a multifaceted immune response - ***atypical mononuclear***
- The virus is detectable in oropharyngeal secretions of 15 to 25% of healthy EBV-seropositive adults

Epidemiology

- EBV is ***relatively labile*** and is not very contagious
- In most cases, the ***incubation period*** is believed to be 30 to 50 days
- ***Transmission*** may occur by transfusion of blood products but much more frequently occurs by oropharyngeal contact (kissing)
- EBV has also been ***associated*** with African Burkitt's lymphoma, certain B-cell neoplasm's in immunocompromised patients, and nasopharyngeal carcinoma

Symptoms and Signs

- ***A tetrad*** of symptoms: fever, pharyngitis, and lymphadenopathy is common; however, patients may have all or only some of these symptoms
- The ***pharyngitis*** may be severe, painful, and exudative and may resemble streptococcal pharyngitis or tonsilitis

Symptoms and Signs

- ***Lymphadenopathy*** may involve any group of nodes but is usually symmetric; anterior and posterior cervical adenopathy is often prominent
- ***Splenomegaly***, observed in about 50 % of cases
- ***Hepatomegaly*** and hepatic may also be observed
- Less frequent findings include ***maculopapular eruptions***, jaundice, periorbital edema, and palatal **enanthema**

Complications

- ***Neurosis complications*** include encephalitis, Guieain-Barre syndrome, peripheral neuropathy, aseptic meningitis, myelitis, cranial nerve palsies, and psychosis
- ***Hematologic complications*** - granulocytopenia, thrombocytopenia, and hemolytic anemia
- ***Splenic rupture***, which requires splenectomy, can result from splenomegaly and capsular swelling

Complications

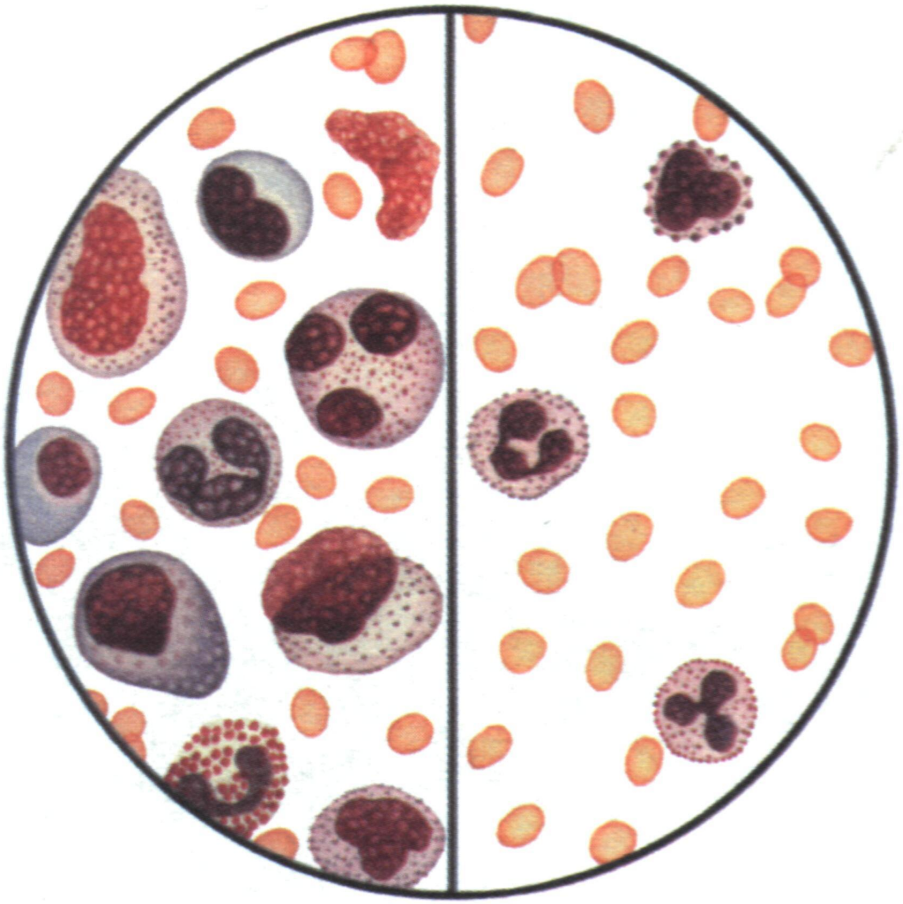
- ***Pulmonary complications*** - obstruction due to pharyngeal or paratracheal lymphadenopathy, intestinal pulmonary infiltrates

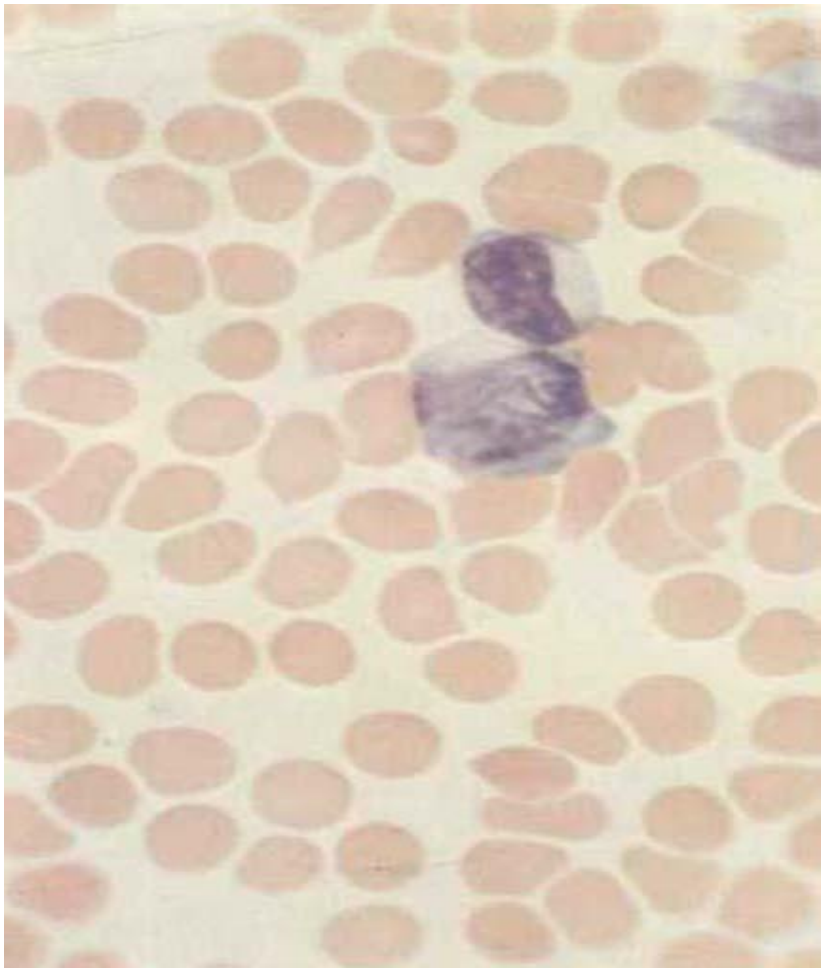
- ***Hepatic complications*** - abnormalities in liver function tests. If jaundice or more severe enzyme elevations occur, other causes of hepatitis should be investigated

Laboratory Findings and Diagnosis

- the ***clinical syndrome*** of infectious mononucleosis and its ***epidemiologic*** setting may be so stereotypical
- a mild ***leukocytosis*** is observed, usually accompanied by a more pronounced relative and absolute lymphocytosis
- ***Antibodies to the EBV viral capsid antigen (VCA) -*** IgM antibodies to VCA are in the primary EBV infection

resulting from reactive lymphocytes that are morphologically atypical to varying degrees (***mononuclear***)





Differential Diagnosis

- The pharyngitis, lymphadenopathy, and fever may be clinically indistinguishable from that caused by ***group A β-hemolytic streptococci***
- The mononucleosis syndrome may be due to **cytomegalovirus** (CMV) too (demonstrating IgM anti-CMV antibodies)
- **Toxoplasma gondii,** ***hepatitis B, or rubella infection***
- A mononucleosis-like illness has also been observed with primary ***HIV infection***

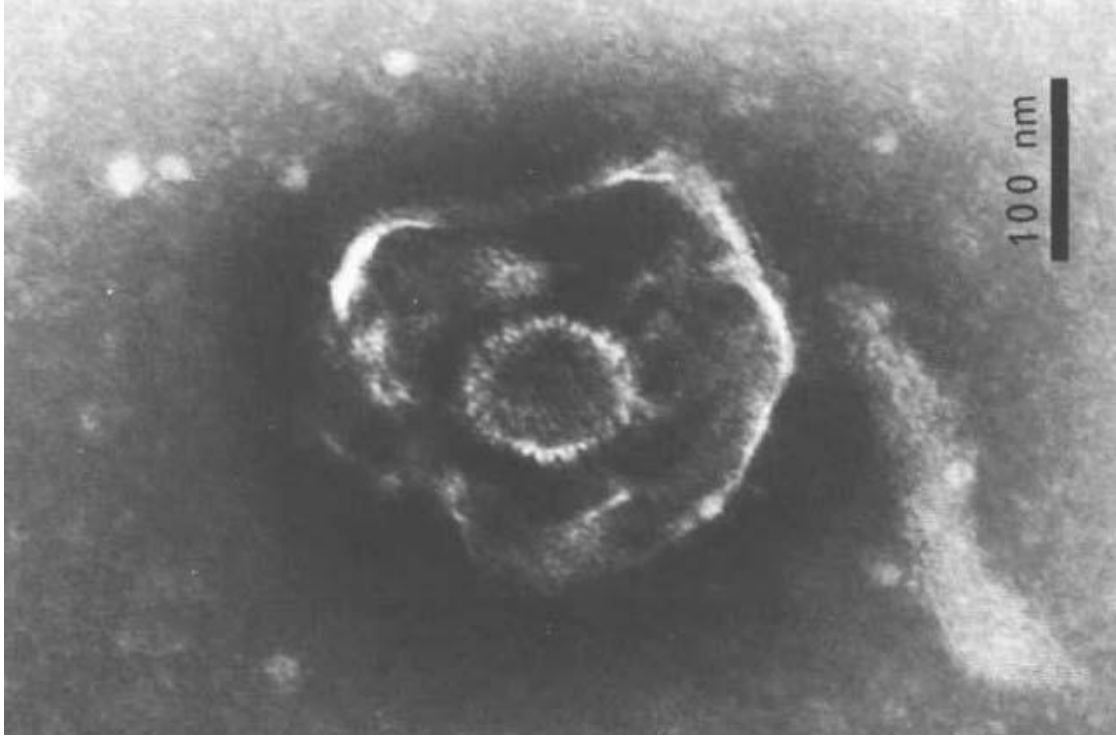
Prognosis

- Infectious mononucleosis is ***usually self-limited***
- The ***duration*** of the illness varies; the acute phase lasts about 2 wk
- Generally, 20% of patients can return to school or work within 1 wk and 50% within 2 wk. In only 1 to 2% of cases, fatigue lasts for months
- **Death** occurs in 1% of cases and is mostly due to complications of primary EBV infection (encephalitis, splenic rupture, airway obstruction).

Treatment

- Patients should be encouraged to ***rest during the acute phase*** because ***of the risk of splenic rupture***
- Because of the rare association of EBV with Reye's syndrome, ***paracitamol is preferable*** to aspirin as an analgesic and antipyretic
- ***Corticosteroids*** should be used only to treat specific complications such as impending airway obstruction
- ***Antibiotic*** should be used ***to treat tonsillitis***. **Ampisillinis shouldn't appoint to patients with mononucleosis**. Penisilliny, makrolidy, cefalosporine should be used.

Varicella



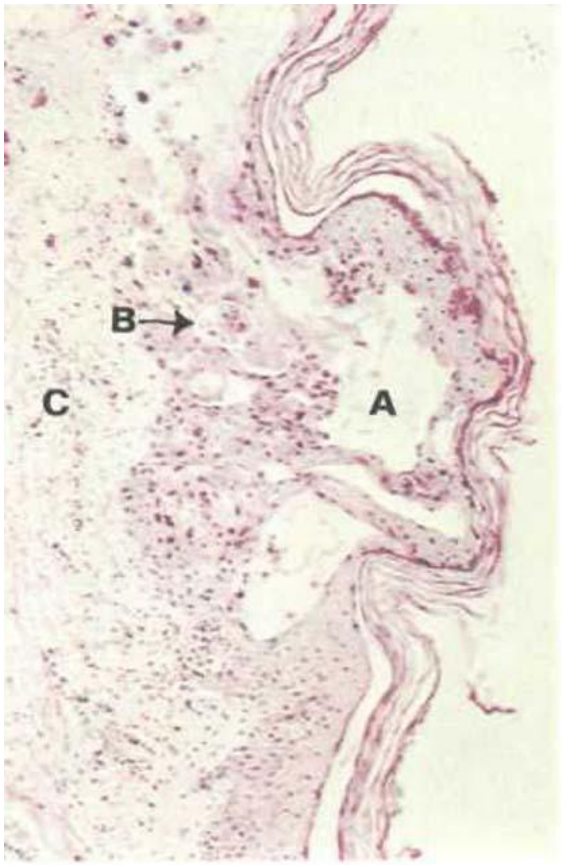
is an acute infectious disease, characterized by vesicular eruption with transparent liquid on skin and mucous membrane

Etiology and Epidemiology

- The ***Varicella virus*** contains DNA. Varicella and herpes zoster were proved to be caused of varicella-herpes zoster virus
- Patients are a source of ***infection*** from the last (1-2) days of the incubation period up to the ninth day from appearances of the elements of the rash
- Infection is ***transmitted*** by air-droplet route
- ***Susceptibility*** to Varicella is very high, practically universal
- ***Stable lifelong immunity*** follows one attack; second attacks are extremely rare

Pathogenesis and pathology

- The ***portal of entry*** is the mucous membrane of the upper respiratory tract
- After an incubation period, the virus ***circulating in the blood*** localizes by preference in the skin owing to its ***dermotropism***



Pathogenesis and pathology

- In very rare cases the lungs, liver, spleen, kidneys, pancreas, and ***other internal organs*** may be affected by the virus
- Many researchers think it possible that the Varicella virus ***may persist in*** the body in the cells of the intervertebral ganglia

Clinical manifestations

- The ***incubation period*** averages 11-21 days
- The ***outbreak of rash*** coincides with a rise of temperature
- At first ***maculopapular***, the elements are very quickly converted into vesicles, but some papules dry up without ***vesiculation***

- ***Vesicles*** are round or oval, differ in size, and are seated superficially on an uneducated base; their wall is tense, and they are lustrous and filled with a clear fluid
- Vesicles dry up in one or two days, forming flat brown ***crusts***

Atypical forms

- In the ***bullous form*** of varicella large flabby bullae develop (up to two or three centimetres in diameter, with turbid contents)
- In the ***gangrenous form*** solitary vesicles assume a hemorrhagic character and are surrounded by inflamed zone
- A ***hemorrhagic form*** is encountered very occasionally in feeble children with symptoms of hemorrhagic diathesis
- ***Generalized*** or visceral form of Varicella with affections of the internal viscera is usually found on posthumous section

Complications

- ***Complications*** are rare in Varicella: keratitis, laryngitis, abscesses, phlegmons, stomatitis, otitis, lymphadenitis and bronchopneumonia
- Individual cases of encephalitis and serous meningitis have been described

Treatment

- The ***basic treatment*** of Varicella is hygienic measures aimed to prevent secondary infection
- Vesicles are painted with aqueous solution of ***brilliant green***
- ***Antibiotics*** are indicated for purulent complication
- ***Antiviral medications*** (acyclovir in the dosage of 5-10 mg/kg/day for 10 days) are administered of complications (encephalitis, pneumonia)

Prophylaxis

- The patients are ***isolated*** (usually at home) for 5 days from the ending of the rush
- ***Disinfection is not*** required because the virus is very unstable
- The patients who ***have contact with Varicella*** to it should be quarantined for a period between eleven and twenty-one days counting from the time of contact