Diphtheria

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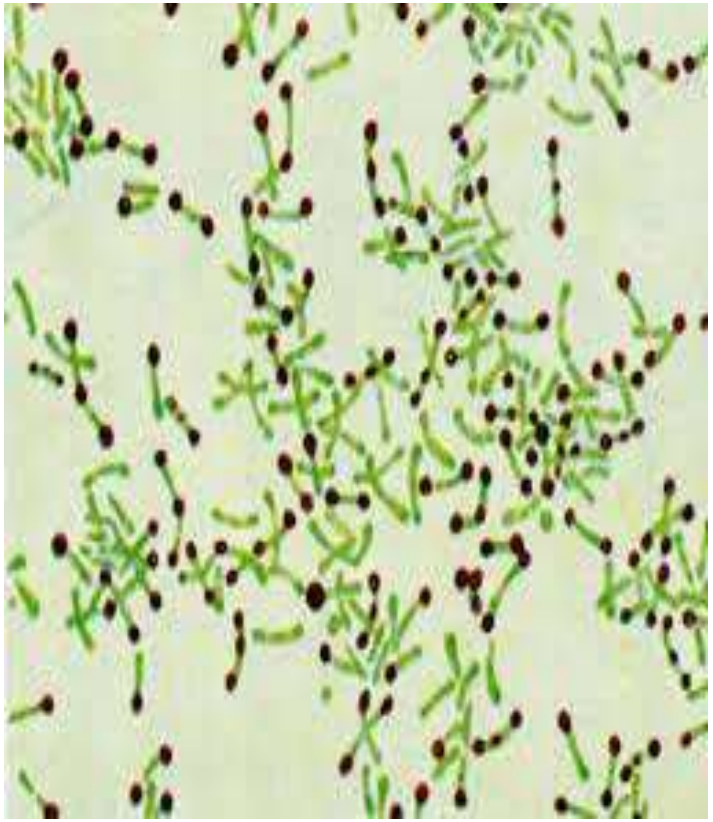
- Diphtheria is caused by *Corynebacterium diphtheriae, which is a Gram-positive rod with a Chinese letter configuration* on Albert's staining. It produces a powerful exotoxin that damages the heart muscle and the nervous system.
- The disease is transmitted by droplet infection from active cases or carriers.
- The incubation period is about 1-7 days.



Clinical Features

- • The usual presenting manifestations are fever and sore throat.
- • The diagnostic feature is the "wash leather", elevated greyish-green membrane on the tonsils, with a surrounding area of inflammation (membranous tonsillitis). The membrane is firm and adherent.
- • Nasal diphtheria is restricted to the nasal mucosa and is characterised by nasal discharge, which is often blood tinged.

- There may be swelling of the neck ("bull-neck" appearance) and tender enlargement of cervical lymph nodes.

- In pharyngeal diphtheria, the diphtheritic membranes are firmly attached to the tonsils or pharynx or both. Later, the soft and hard palates too become covered. In severe cases, there may be accompanying cervical lymphadenopathy and marked oedema of submandibular areas giving rise to the characteristic "bull-neck" appearance (malignant diphtheria).

- • In laryngeal diphtheria, there is involvement of the larynx as a result of extension of the diphtheritic membrane from Pharynx. There is a husky voice and a high-pitched cough.

- In cutaneous diphtheria, there are round, deep, "punchedout" ulcers covered by a grey-yellow or grey-brown membrane.
- It occurs in individuals with poor hygiene and with burns.

Complications

- Extension of the membrane into larynx and trachea leads to laryngeal obstruction and bronchopulmonary diphtheria.
- Myocarditis can result in arrhythmias, cardiac failure and ECG changes. It often occurs weeks after initial episode of diphtheria.
- Peripheral neuropathy can occur in a "glove and stocking" distribution.
- Bulbar paralysis results in ill, VI, VII, IX and X cranial nerve palsies and diaphragmatic paralysis.
- Encephalitis can occur rarely.

Diagnosis

- The diagnosis is based on the demonstration of the characteristic diphtheritic membrane. However, a variety of other conditions can also cause membranes ("pseudomembranes"). These include infectious mononucleosis, streptococcal pharyngitis, viral exudative pharyngitis, fusospirochaetal infections and acute pharyngeal candidiasis.
- Demonstration of the organisms on methylene blue stained preparations.
- Culture of the organism on Loeffler's medium.
- Detection of toxin by rapid enzyme immunoassay or PCR.

Management

- Isolation and strict bed rest.
- Antidiphtheritic toxin should be given as early in the course of diphtheria as possible. A delay in administration can be dangerous because toxin once fixed to the tissues can no longer be neutralised. A dose of 4000-8000 units is given intramuscularly for mild disease, 16,000-32,000 units intramuscularly for moderately severe disease and up to 100,000 units for very severe disease. Antidiphtheritic serum can cause two types of reactions, an immediate anaphylactic reaction and a delayed serum sickness-like reaction. The immediate anaphylactic reaction should be treated with adrenaline and an antihistamine.

- Benzylpenicillin is given at a dose of 600,000 units 6 hourly intravenously for 7 days to eradicate the organism. Patients allergic to penicillin can be treated with erythromycin.
- Tracheostomy may become necessary for respiratory distress.
- Close contacts should be protected by erythromycin prophylaxis and immunisation.
- Vaccines include DPT (diphtheria, pertussis, tetanus toxins), DT (diphtheria, tetanus toxins) and Td (tetanus, reduced diphtheria toxins).