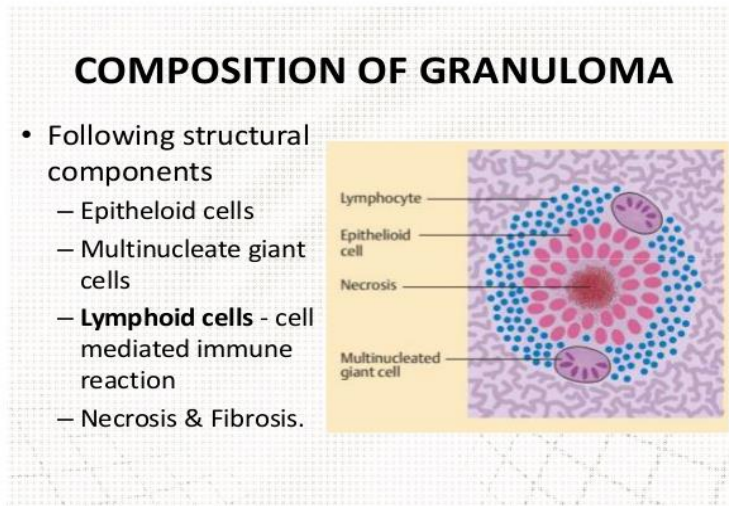


- **GRANULOMNIA:**
- Is a type of chronic specific inflammation characterized by **focal and sometimes diffuse accumulation of large number of macrophages, lymphocytes, plasma cells, epithelioid cells, giant cells and the entire lesion may become surrounded by fibroblast cells or fibrous tissue to form tiny granules which may fuse together to form tumour like masses**



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- ***Types of granulomas***
- **1) Infective:**
 - a) Bacterial e.g. T.B., Actinobacillosis and John's disease.
 - b) Parasitic: e.g. Billiariziases and migrating parasites
 - c) Fungal (mycotic) e.g. Aspergillosis and candida aibicans.
- **2) Non infective:**
 - a) Silicosis and asbestosis.
 - b) Foreign bodies as pieces of wood or glasses, catgut and talc powder.

Glanders

It is a chronic infectious and contageous disease of equines characterized by the formation of nodules which has the tendency to breakdown forming ulcers.

Cause

**Malleomyces mallei, pseudomonas mallei , actinobacillus mallei
Burkholderia mallei**

ROI

Mainly ingestion

Rare inhalation

Susceptibility

1- Equines are the most susceptible. Man, sheep, goats, dogs and zoo carnivore may be infected.

2- Cattle and pigs are immune.

Pathogenesis

Mo by ingestion penetrate pharyngeal and intestinal mucosa reaching general circulation

Then enter pulmonary capillaries where it localize and typical lesions are formed

From the lung , infection spread by hematogenous route to upper respiratory passage to the skin and other parts of the body

Gross pathology and lesions

- **Glanders has 3 forms:**
- 1- pulmonary form
- 2-nasal form
- 3-cutaneous form (FARCY)

Pulmonary form

- In the lung , the bacilli incite bronchopneumonia that terminate in suppurative pneumonia
- The lesion characterized by accumulation of neutrophils and histiocytes . The neutrophils become degenerated resulting in the characteristic scattering nuclear fragments for glanders
- Macrophage become epithelioid cells and some of them fuse to form giant cell
- Peripheral to the lesion, there is hyperemia and fibrinous exudate which encircled by fibrous tissue
- The structure of glanders nodules differ with its age

1-Young nodules

- consists of central area of degeneration with particles of polymorph nuclei surrounded by 1-histiocytes
- -zone of red blood cells
- fibrinous exudate

2- older nodules

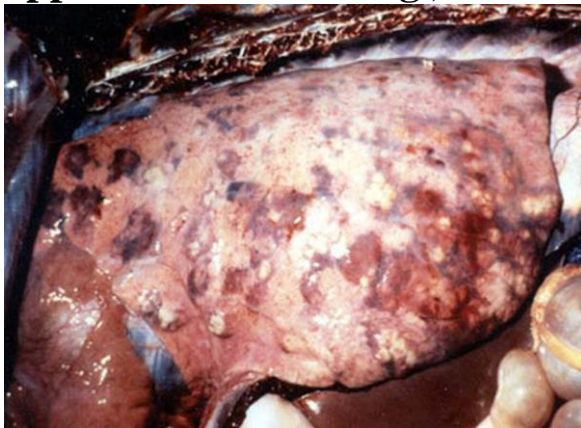
- Consisted of central degenerated area surrounded by epithelioid cells and few giant cells

3-very old nodules

- Show scattered area of calcifications in the necrosed central area

glanders nodules

- When the central necrotic area is liquified , it is called **exudative form** of miliary lesions
- When the central area consisted of epithelioid cells, giant cells and lymphocytes , it is called **proliferative form** of miliary lesions in which suppuration doesn't occur
- So the nodules in the lung are either of proliferative or exudative in nature depending on the toxicity and virulence of the organism
- **Highly toxic and virulent organisms cause exudative nodules**
- **Less toxic organisms cause proliferative nodules**
- The nodules are numerous , yelowish grey 1-3 mm in diameter, surrounded by hyperemic or hemorrhagic zone (**gun shot appearance of the lung**)



Extensive pyogranulomatous lesions. The nodules are gray or white and firm, surrounded by a hemorrhagic zone (Gunshot), and may become caseous or calcified

2-nasal form

- **Unilateral and may be bilateral rhinitis, begin as cattarhal but quickly changed to purelent with thick greenish yellow discharge usually flecked with blood and desquamated epithelium**
In the submucosa small millet sized gray or yelowish nodules are formed which is surrounded by a red zone