Endocarditis (vegetations)

Non-infective

1. Rheumatic endocarditis
2. Non-bacterial thrombotic endocarditis
3. Atypical verrucous (Libman Sacks) endocarditis

Infective

1. Bacterial endocarditis
2. Others: fungal, rickettsial etc

Non-bacterial thrombotic endocarditis

- Encountered in debilitated patients with cancer and sepsis (**marantic endocarditis**)
- Deposition of fibrin, platelets on the surface of valves
- **Sterile** vegetations
- Significant for **risk of embolisation** and infarction

Pathogenesis

- Hypercoagulable state with systemic activation of coagulation as in advanced cancer-mucin secreting adenoca, acute leukemia, extensive burns, sepsis
- In young- allergy, DVT, endocardial trauma (indwelling catheter)

Morphology

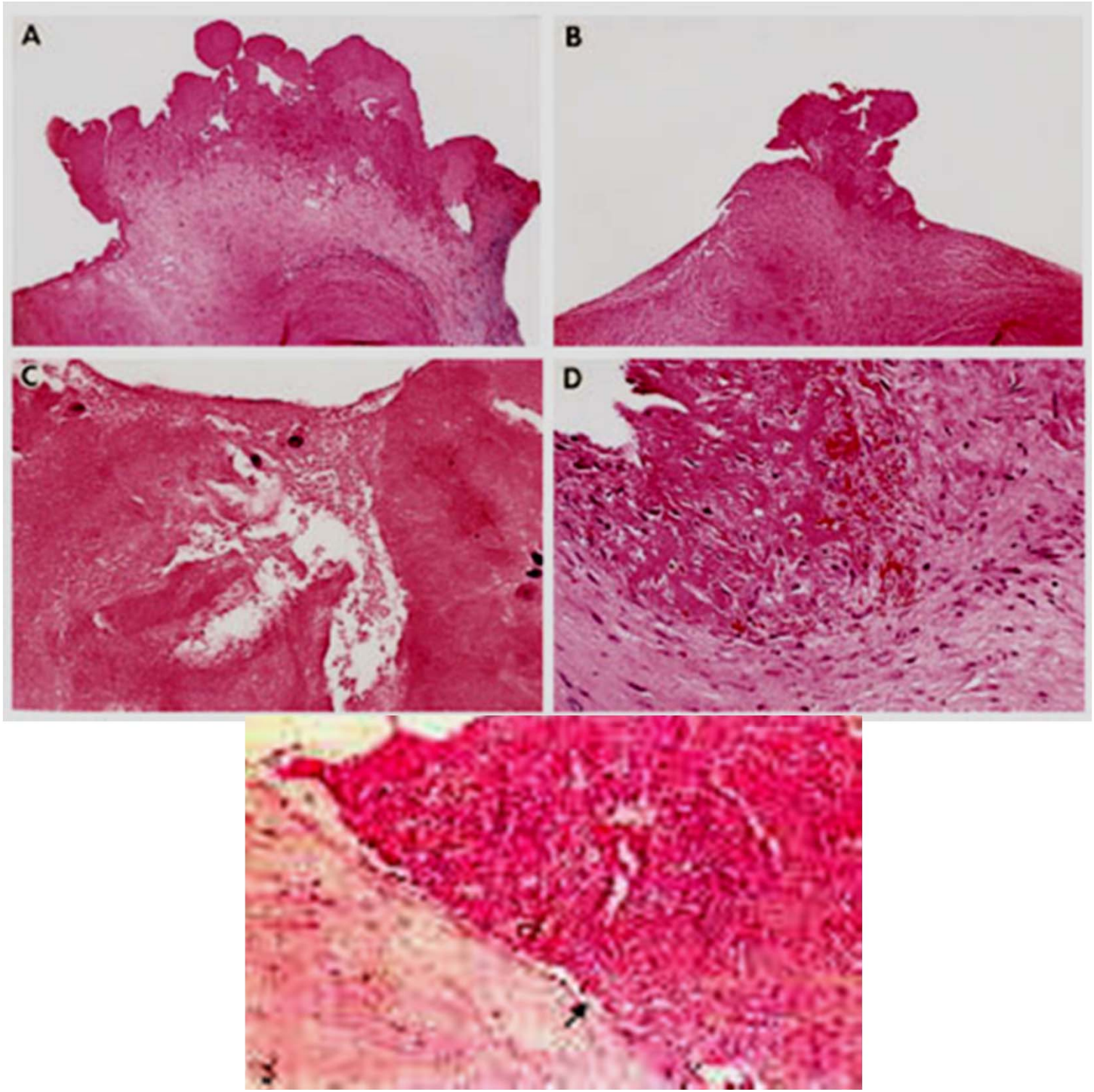
Gross

- Small (1-5 mm), non-destructive vegetations
- Single/ multiple along line of closure
- More friable than RHD
- Heal by organisation

M/E

- Composed of fibrin, entangled RBCs, WBCs, platelets
- Sterile, bland without inflammation or valve destruction

Emboli may be seen → infarcts of brain, lung, spleen, kidney

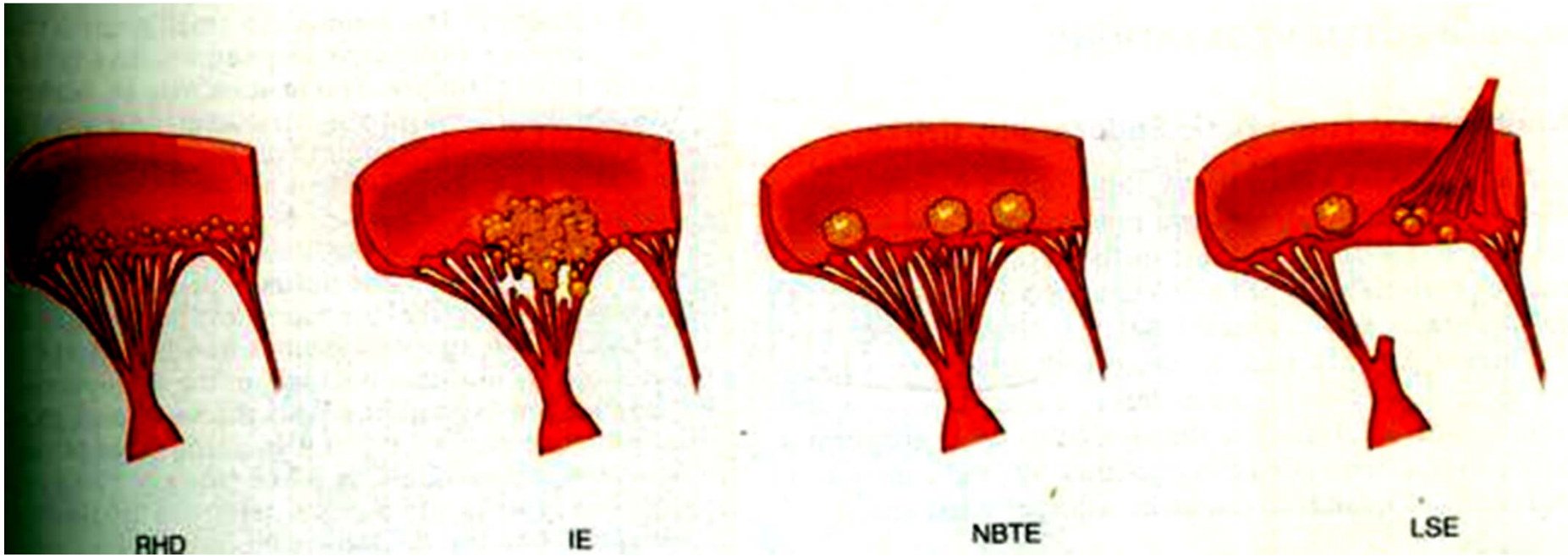

A
B
C
D

Endocarditis of SLE (Libman-Sacks Disease)

- Small, sterile vegetations
- Pathogenesis- manifestation of collagen diseases seen in 50% cases of SLE, systemic sclerosis, TTP
- **Gross**- 1-4 mm, granular, multiple, occur on the undersurface of valves, cords or mural endocardium of atria, ventricles

  - no valvular deformity
- **M/E**: fibrinous material with platelet thrombi, capillary proliferation, hematoxylin bodies

  - mitral/ tricuspid valvulitis with fibrinoid necrosis of valve substance


RHD
IE
NBTE
LSE

Valvular heart disease

- **Stenosis:** failure of valve to open completely, impeding forward flow
- **Insufficiency/ regurgitation**: failure of valve to close completely, causing reverse flow
- **Pure:** only stenosis or regurgitation
- **Mixed:** both stenosis and regurgitation are present in the same valve
- **Isolated disease:** only one valve is affected
- **Combined:** > 1 valve dysfunctional
- Congenital or acquired
- Can be rapid onset and fatal like AR (IE) or asymptomatic and chronic like MS (RHD)

Common causes

- **Aortic stenosis**: calcification of normal or congenital bicuspid valve
- **Aortic insufficiency**: dilatation of ascending aorta, related to HT, aging
- **Mitral stenosis**: RHD
- **Mitral regurgitation**: myxomatous degeneration (mitral valve prolapse)

Most frequent are acquired AS & MS (2/3 of all valve dis)

Valvular degeneration caused by calcification

- Calcific aortic stenosis: aging (senile)
- Calcific aortic stenosis of congenitally bicuspid valves
- Mitral annulus calcification

Myxomatous degeneration/ Mitral valve prolapse

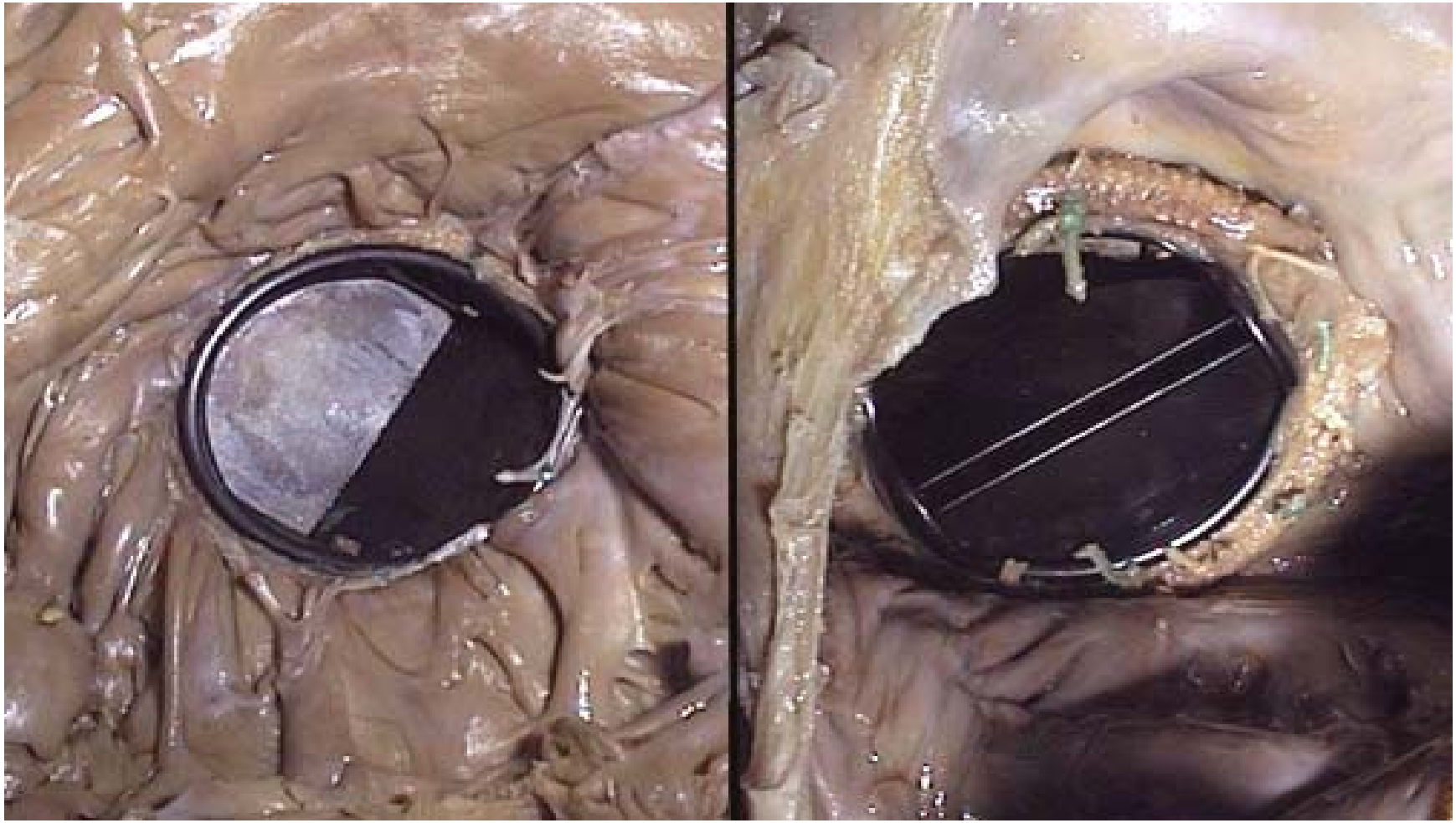
- Seen in Marfans synd
- Asymptomatic/ murmur
- Post leaflet of mitral valve- opaque, white, soft, floppy- Floppy valve syndrome
- M/E- loose CT with abundant mucoid material due to MPS

Complications of artificial valves

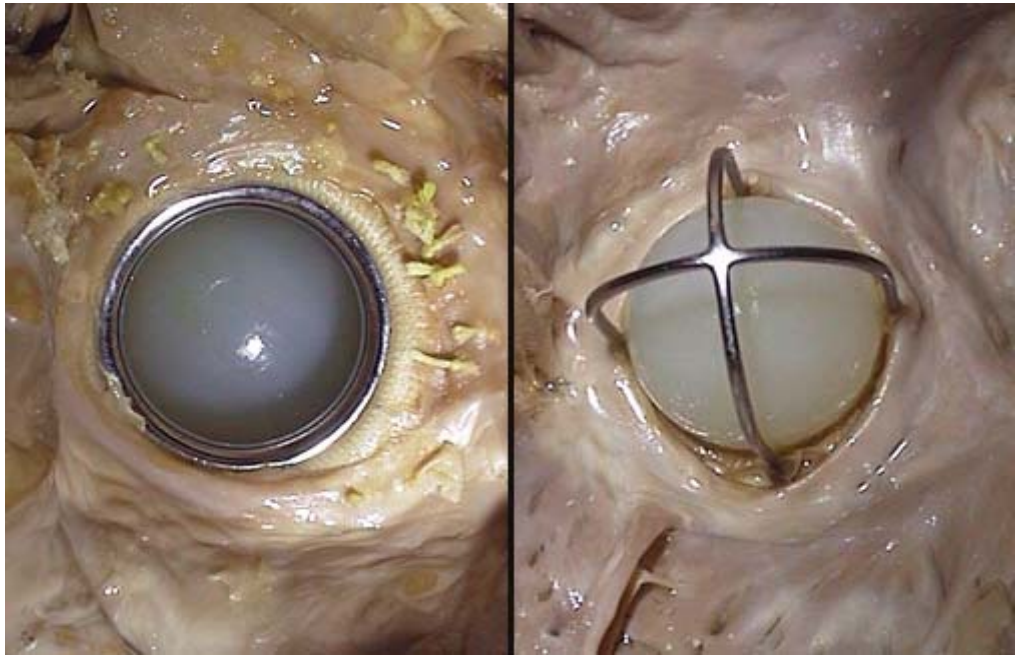
1. Mechanical prosthesis: composed of nonphysiological biomaterials
2. Tissue valves: bioprosthesis

- Thromboembolic – local obstruction by thrombus or distant emboli
- IE: staph, strep, fungi
- Structural deterioration: fracture, calcification, tear
- Nonstructural dysfunction: paravalvular leak, hemolytic anemia

Mechanical Valve



Mechanical Valve



Porcine Valve

Tissue Valve

B

Figure 38-2B Examples of biologic (tissue) heart valves. B, Hancock II, a stented pig valve.

(Courtesy of Medtronic, Inc., Minneapolis, MN.)

Carcinoid heart disease

- Cardiac manifestation of systemic syndrome caused by carcinoid tumor
- Present in 50% of patients with **Carcinoid syndrome:** flushing of skin, cramps, nausea, vomitting, diarrhea
- **Release of vasoactive amines by carcinoid tumors**: serotonin, histamine, kallikrien, prostaglandins
- Levels of S. serotonin & urinary **5-OH-indole acetic acid** are indicators of severity of cardiac lesions

- Normally, metabolism of serotonin occurs in liver and in lung by monoamine oxidase
- Primary carcinoid tumors of GIT rarely cause syndrome in absence of hepatic metastasis
- Right heart more commonly affected
- Left heart affected in pulmonary carcinoid or R-L shunt

Morphology

- R>L
- Gross: fibrous intimal thickening in RV, tricuspid and pulmonary valves
- Micro: plaque composed of smooth muscle cells, scanty collagen in a mucopolysaccharide rich matrix
- Underlying structures are intact