



# PATHOLOGY

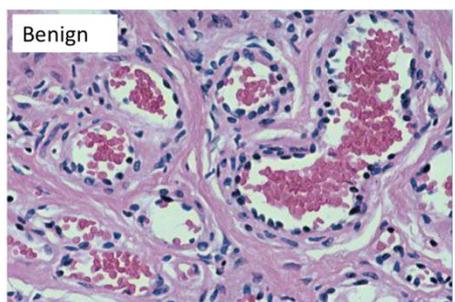
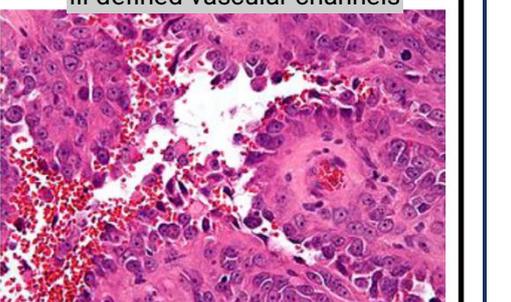
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• **Lymph-angi-oma** a benign tumor that is originating from lymphatic vessels or forming lymphatic vessel

# CVS TUMORS

\*note: vascular tumors are different than angiogenesis

**Vascular tumors** originate from the endothelial cells and are categorized according to their morphology and clinical presentation into:

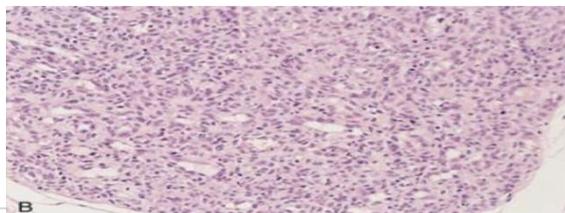
Benign tumors	Borderline tumors	Malignant tumors
<p>They form <u>well defined</u> vascular channels and are lined by normal appearing endothelial cells. They look similar to normal endothelial cells - flat and don't show high degree of atypia .</p> <p>many vessels (lined by endothelium) present at the same location forming a mass</p> <p>Most common They don't metastasize</p>	<p>Their behavior is intermediate between benign and malignant tumors.</p> <p>The cells look more spindle in shape , with small abnormally shaped vascular channels. They show higher grade of atypia.</p> <p>They are rare Locally aggressive They don't metastasize</p>	<p>cellularity: number of cells/area</p> <p>They are more cellular and proliferative .</p> <p>They show cytologic <u>atypia</u> , anaplasia and don't form well organized vessels unlike benign tumors. <u>poorly differentiated</u></p> <p>They are highly mitotic . mitotic figures</p> <p>They are rare They metastasize</p>
<p>e.g : hemangioma</p>	<p>e.g. kaposi sarcoma</p>	<p>e.g. angiosarcoma</p>
 <p>Benign</p> <p>vessels lined by endothelium and contain blood</p>	 <p>Borderline</p> <p>higher cellularity than benign ill defined lumen and less in number irregular endothelial cells</p>	 <p>ill defined vascular channels</p> <p>cells are larger in size, with larger, abnormal nuclei more prominent nucleoli,</p>

## Hemangioma [ hem=blood, angi=blood vessel, oma= benign tumor]

↳ They are common benign vascular tumors composed of blood-filled vessels, they most commonly affect infants and children. Most of the lesions are present from birth and as the child grows, many regress spontaneously [ their size decreases and color becomes faint] and some of them completely disappear. They are mostly found in the head and neck region, and sometimes they could affect the internal organs [1/3 is found in the liver]. It is very rare for Hemangioma to turn into a malignant tumor [malignant transformation].

### Histologic and clinical variants

1. **Capillary hemangiomas:** They are the most common type; they affect the skin and mucous membranes of the oral cavity and lips the most. The vascular spaces formed in the tumor look like capillaries, hence the name. They appear as dark (blood) colored lesions that resemble bruises.



many (very small blood vessels like capillaries) at the same location  
- neoplastic: monoclonal in origin

color ↙

2. **Strawberry hemangiomas of newborns (juvenile hemangioma):** their most common sites to be found in are the head and neck (the scalp is very commonly affected). They appear at birth and usually regress with time.



not infectious

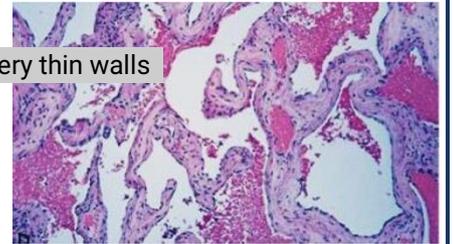
3. **Pyogenic granulomas:** [ this is an old nomenclature that isn't accurate, it doesn't contain granuloma and it isn't pyogenic] they are rapidly growing pedunculated lesions on gingival mucosa, 1:3 of the cases present with history of trauma.



\*Pedunculated means it has a stalk or "main stem"

4. **Cavernous hemangiomas:** they contain large and dilated vascular channels [cavernous means large as a cave], they affect deep organs, most commonly the liver. Unlike the other types of hemangiomas, this one doesn't regress spontaneously.

very thin walls



they can enlarge in size, sometimes they can produce hemorrhage

old nomenclature

### Intermediate-Grade (Borderline) Tumors

**Kaposi Sarcoma (KS):** is a vascular neoplasm caused by human herpesvirus-8 **HHV-8** infection

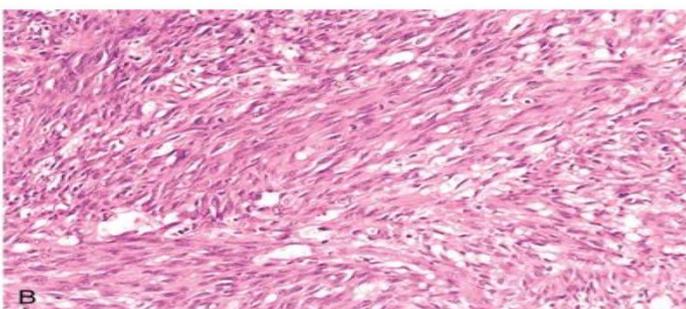
It has several types:

- a. Classic
- b. Endemic
- c. Transplantation-associated
- d. AIDS-associated(epidemic): it is the most common HIV-related malignancy. Usually in healthy people infection with HHV-8 doesn't cause symptoms because the immune system keeps everything under control. However, individuals with HIV have compromised immune systems that allow HHV-8 to be activated inside the infected endothelial cells turning them into Kaposi sarcoma. It is an AIDS-defining illness (used as a criterion for diagnosis of AIDS).

related is different than caused

Kaposi Sarcoma most commonly affects the skin and subcutaneous tissue, it is presented as multiple red-purple skin plaques or nodules, usually on the distal lower extremities. They increase in size and number progressively and they spread proximally. Under the microscope the tumors look like crowded spindle shaped cells. These tumors don't form well organized vascular channels.

HHV-8 infection and kaposi sarcoma are very common in HIV infected patients, so it is included in the criteria to diagnose AIDS



look like different stages of skin bruises

## Malignant Tumors [-sarcoma=malignant mesenchymal tumor]

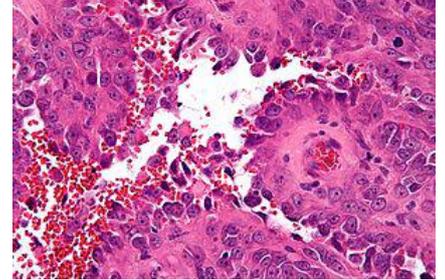
**Angiosarcoma:** lesions that can occur at any site, the skin and subcutaneous tissue being the most common targets. Other sites include soft tissue, breast and liver. Its pathogenesis is complicated and could be caused by carcinogens' effect. However, it is still unknown how these tumors exactly evolve. It has been noticed that there is a latent period between exposure to a specific carcinogen and tumor development.

**Risk factors:**

substance that causes cancer

example: CCL4 ,  
used in dyes and  
dry cleaning

- a. Chemical carcinogens [liver angiosarcoma]
- b. Irradiation → may cause lymphangioma or angiosarcoma
- c. Lymphedema (very rare): e.g. A few breast cancer patients who had radical mastectomy with lymph node resection might develop a complication lymphedema in the ipsilateral upper extremity, and a small percentage of people who developed lymphedema could be at risk to develop angiosarcoma several years after the mastectomy.



-accumulation of lymph in the interstitium of different tissues causing swelling -> dilated lymphatics for many years (stagnant fluid), ->possibility of irritation, infection ->proliferation in these vessels , and multiple mitoses may cause mutation-monoclonal cells

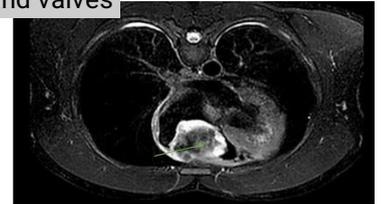
- d. Presence of foreign bodies for a long period of time (years).

### Cardiac Tumors

There are some factors that play a role in the prognosis and the outcome when evaluating any cardiac mass: most important, because we are talking about heart chambers and valves

even if it was benign, if the location is critical it can be life threatening

- 1. Localization: where is the exact location of the tumor?
- 2. Clinical context or presentation
- 3. Age of the patient
- 4.Characteristics and behavior of the tumor



CARDIAC MAGNETIC RESONANCE IMAGING (CMRI)

**Cardiac tumors** are very rare, and the most common **primary** malignant tumor of the heart is **Angiosarcoma**. <sup>secondary</sup> **Metastatic neoplasms** are the most common malignancy of the heart and are present in 5% of the people dying due to cancer. The most common source of metastatic cardiac tumors is lung cancer. Although benign tumors are rare, they are important for their critical location. **Clinical features and significance:**

physical effect

- 1. **“Ball-valve” obstruction:** The tumor with its stalk can move with the heart during systole and diastole with the direction of blood flow, sometimes this tumor can cause **transient occlusion** of the heart valve during either systole or diastole which could be very significant. Significant effect according to the size, site and type of valve affected
- 2. **Embolization:** a fragment of the friable tumor can embolize and go to the systemic circulation. fragile, can break
- 3. **Fever and malaise:** systemic manifestations of inflammation related to tumor elaboration of **interleukin-6**

**Diagnosis:** Echocardiography + Other radiological studies

**Treatment:** surgical resection especially in benign tumors

