**The Dark Side of Growth: Neoplasia and Its Consequences**[Exploring the Cellular and Molecular Pathology of Human Diseases: A Case-Based Approach]

*Transcript updated on March 6, 2024*

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| **Slide 1** | *Title slide* |
| **Slide 2** | In this module, we will learn about benign and malignant tumors. We will then further understand neoplasia through a case study. Through the case study, we will explore the patient’s physical examination, imaging, histology findings, and risk factors of neoplasia. |
| **Slide 3** | Neoplasia refers to a new, abnormal growth of tissue. A neoplasm’s growth surpasses and is uncoordinated with the growth of surrounding normal tissue. Neoplasms can be benign or malignant. Benign and malignant tumors can be contrasted by three main features.   * Benign tumors are localized, while malignant tumors show more rapid and uncontrolled growth. * Benign tumors are well-differentiated, which means they look similar to the tissue around them. On the other hand, malignant tumors are poorly differentiated cancer cells and may be life-threatening. * Finally benign tumors do not invade surrounding tissues, while malignant tumors do and can metastasize to distant sites. For instance, a tumor in the lung could metastasize to the liver. |
| **Slide 4** | Let’s take a look at our patient profile. Armin Iravani is a 72-year-old male. He has a history of smoking, type 2 diabetes, obesity, and hypertension. |
| **Slide 5** | *Narration on slide.* |
| **Slide 6** | Mr. Iravani’s left shin shows a firm, irregular, and non-tender mass about 10 cm in diameter. The overlying skin is normal, and there is no evidence of lymphadenopathy or edema. Lymphadenopathy is when the lymph nodes swell due to malignancies. Edema is swelling caused by excessive interstitial fluid buildup at an affected site. Mr. Iravani’s vital signs and blood test results appear normal.  *Narration on slide.* |
| **Slide 7** | Imaging results reveal a large, irregular mass in the left shin with evidence of invasion into adjacent tissues. This prompts Dr. Lee to suspect a malignant neoplasm. |
| **Slide 8** | A core needle biopsy is performed, and microscopic examination reveals a proliferation of atypical, hyperchromatic cells with abundant cytoplasm. The cells show invasive growth patterns and appear to be originating from mesenchymal tissues. Dr. Lee discusses these findings with the patient, explaining that the features are suggestive of a malignant tumor, specifically a sarcoma. |
| **Slide 9** | *Narration on slide.* |
| **Slide 10** | *Narration on slide.*  The grade of a tumor describes the appearance of cancerous cells. The higher the grade, the more aggressive and faster cancer cells grow, and the less they resemble normal cells. The stage of a tumor describes the size and how far it has spread from its site of origin |
| **Slide 11** | Let’s see how Mr. Iravani’s history of smoking and obesity affects his risk of getting cancer. Smoking does not have a direct link to liposarcomas. However, tobacco use can contribute to overall health issues that may impact the body’s ability to resist and combat tumor growth. Obesity is associated with increased risk of various cancers, including sarcomas. The excess adipose tissue may create a pro-inflammatory environment, potentially promoting the development of certain tumors. |
| **Slide 12** | *Narration on slide.* |
| **Slide 13** | *Narration on slide.*  Dr. Lee refers Mr. Iravani to an oncologist and a surgeon for a more comprehensive treatment plan and prognosis. |
| **Slide 14** | *Knowledge check* |
| **Slide 15** | *Knowledge check* |
| **Slide 16** | *Knowledge check* |
| **Slide 17** | *Knowledge check* |