

The Impact of Surgical Pathology on Cancer Diagnosis and Treatment Planning

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DESCRIPTION

Surgical pathology is an essential subspecialty within the field of pathology that plays an important role in diagnosing diseases and guiding treatment decisions. It involves the examination of tissue samples removed during surgical procedures to determine the presence, nature and extent of diseases, particularly cancers and infections. Surgical pathologists work alongside surgeons to help diagnose conditions, provide prognostic information and guide clinical decision-making. This article describes the significance of surgical pathology, its process and its impact on patient care.

Surgical pathology is concerned with examining tissues and organs that have been surgically removed from patients. These samples, often referred to as biopsies, are sent to pathologists for detailed analysis. The goal of this analysis is to identify any abnormal conditions, such as tumors, infections or inflammatory diseases and to provide accurate diagnostic information that will influence further treatment.

The tissues examined in surgical pathology may come from a variety of sources. Common examples include:

Biopsy samples: Small tissue samples taken during a procedure to check for abnormal growths or changes.

Resection specimens: Larger pieces of tissue removed during surgery to treat a disease or cancer.

Lymph nodes or other organs: Sent to check for the spread of cancer or other diseases.

Surgical pathologists are responsible for ensuring that the tissue samples are processed correctly, interpreted accurately and that the correct diagnosis is made.

Role of surgical pathologists

Surgical pathologists play an important role in patient care. When a surgeon removes a tumor or another abnormal tissue, the sample is sent to the pathology lab for examination. Surgical pathologists carefully examine the tissue under a microscope to identify any abnormalities, such as cancerous cells, infections or other disease processes.

In addition to identifying the presence of disease, surgical pathologists provide essential information about the nature and extent of the condition. For example, in cancer diagnosis, they determine the type of cancer, its grade and its stage. This information is important for determining the most appropriate treatment options, such as surgery, chemotherapy or radiation therapy.

Process of surgical pathology

Tissue collection: The process begins with the removal of tissue during surgery. This may involve taking a biopsy or removing an entire tumor or organ.

Fixation: The tissue sample is preserved through a process called fixation, usually using formaldehyde, which helps maintain the structure of the tissue and prevents decay.

Tissue processing: After fixation, the tissue is embedded in a block of paraffin wax to preserve it for further examination. This step ensures the tissue remains whole and is ready for slicing.

Sectioning: The embedded tissue is then thinly sliced, usually to the thickness of a hair, using a microtome. These thin sections are placed on glass slides for further analysis.

Staining: The tissue slices are stained with various chemicals to highlight specific structures and abnormalities. Hematoxylin and eosin staining is the most common method, but special stains may also be used to identify specific features of the tissue.

Microscopic examination: Once stained, the tissue slides are examined under a microscope. Surgical pathologists look for abnormalities in the tissue's cells and structure, assessing whether the tissue is normal or if disease is present.

Diagnosis and report: After the examination, the pathologist writes a detailed report outlining their findings. This report is sent to the surgeon and other members of the medical team, helping to guide treatment decisions.

CONCLUSION

Surgical pathology is a base of modern medicine, providing essential information for diagnosing diseases, guiding treatment

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and offering prognostic basis. The work of surgical pathologists ensures that tissue samples are carefully analyzed and accurately diagnosed, allowing healthcare providers to offer the most effective treatments for their patients. As technology continues to

advance, the evolution of surgical pathology offers the potential and personalized care, making it an indispensable part of the medical field.