Islamic university

Radiology techniques Department/ Third Stage

Practical Pathology

Lab.3

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FIXATION OF TISSUE

Main Topics of the lecture:

- Definition of fixation
- Aim of fixation
- Factors Affecting Fixation
- Types of fixation
- Simple fixatives

Introduction

Fixation: Fixation is usually the first stage in a multistep process to prepare a sample of biological material for microscopy or other analysis.

Aims of Fixation

1 .To preserve the tissue nearest to its living state

2 .To prevent any change in shape and size of the tissue at the time of processing

3 .To prevent any autolysis

4 .To make the tissue hard enough

5. To prevent any bacterial growth in the tissue

Factors Affecting Fixation

1. Size and thickness of piece of tissue.
2. Tissue covered by large amount of mucous and blood fix slowly.
3. pH
5. Osmolarity
6. Temperature
7. Volume of the Fixative
8. Time interval from of removal of tissues to fixation:
9- Duration of fixation

There are generally three types of fixation process:

1.Heat fixation: After a smear has dried at room temperature, the slide is gripped by tongs or a clothespin and passed through the flame of a Bunsen burner several times to heat-kill and adhere the organism to the slide.

2.Perfusion: Fixation via blood flow. The fixative is injected into the heart, but the disadvantages that the subject dies and the cost is high (because of the volume of fixative needed for larger organisms).

3. Immersion: The sample of tissue is immersed in fixative.

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Simple fixatives

1. **Formaldehyde**:
    - Formalin is most commonly used fixative
    - 10% formalin is used for tissue fixation.
    - It is cheap, penetrates rapidly and does not over- harden the tissues.

2. **Absolute alcohol**
    - **it may be used as a fixative as it coagulates protein.**
    - **Due to its dehydrating property it removes water too fast from the tissues and produces shrinkage of cells and distortion of morphology.**
    - **It penetrates slowly and over-hardens the tissues.**

3. **Osmic acid – It is used for fixation of fatty tissues and nerves.**

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