



Ischemia & Infraction

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Ischaemia definition

- It is a state, when a tissue or organ has it's arterial perfusion lowered relative to its metabolic needs.

OR

Ischemia is defined as a condition of inadequate blood supply to an area of tissue.

- *Ischaemia* [*ischaem*=to check and *haim* = blood] is inadequate blood supply to a part of the body, even to the point of complete deprivation.
- Is simply defined as a condition of inadequate blood supply.

Cause of ischaemia

General Causes -

- May be caused by inadequate cardiac output but not all tissues are equally affected because of redistribution of available blood.
- Symmetrical gangrene of the extremities is an occasional manifestation.

Local causes-

- By far the most important cause of ischaemia is obstruction of arterial flow.
- Extensive venous and capillary damage also produces ischaemia.

Harmful effects of ischaemia

➤ There are three harmful effects of ischemia:

- **Hypoxia**- Oxygen deprivation. By far the most important factor for ischemic tissue damage of very active cells. Eg. muscles
- **Malnutrition**- blood contains glucose and amino acids that could be metabolised by the amount of oxygen it contain, hence it is of less importance.
- **Failure to remove waste products**- 'accumulation of metabolites is the most explanatory pain in muscle ischaemia'.

Ischaemia of the brain

- Symptoms of ischemia of the brain include:
- Abnormal pupil size or non reactivity to light
- Balance problems, difficulty walking, and falls
- Confusion
- Difficulty with memory, thinking, talking, comprehension, writing or reading
- Dizziness
- Droopy eyelid

Other type of ischaemia

Symptoms from ischemia in other parts of the body can include:

- Abdominal discomfort when eating
- Bloody stool (the blood may be red, black, or tarry in texture)
- Diarrhea
- Leg pain with walking or climbing stairs
- Nausea with or without vomiting
- Non-healing sores
- Pain



Infraction



Infraction Definition

Localized area of ischemic necrosis in an organ or tissue resulting most often from reduction of arterial blood supply or occasionally its venous drainage



Cause of infraction

- Most Commonly - Infarcts are caused by Interruption in arterial blood supply, called ischemic necrosis
- Less commonly - Venous obstruction can produce infarcts termed stagnant hypoxia

Pathogenesis of infarction

- Infarction usually leads to circumscribed area of coagulative necrosis which is subsequently organized into scar tissue.
- Death of cells in an area deprived of blood supply but blood continues to seep into the devitalized area for a short time.

Infract of different organ

	Location	Gross appearance	Outcome
1	Myocardial infraction	Pale	Frequently lethal
2	Pulmonary infraction	Hemorrhagic	Less commonly fatal
3	Cerebral infraction	Hemorrhagic & Pale	Fatal if massive
4	Intestinal infraction	Hemorrhagic	Frequently lethal
5	Renal infraction	Pale	Not lethal unless massive & bilateral
6	Infract spleen	Pale	Not lethal
7	Infract liver	Pale	Not lethal
8	Infracts of lower extremity	Pale	Not lethal

Pathologic Changes

- Grossly, infarcts of solid organs - **wedge-shaped**
- apex - pointing towards occluded artery
- wide base - on the surface of the organ.
- Infarcts due to arterial occlusion -
- venous obstruction - **hemorrhagic.**
- Most infarcts become pale later as the red cells are lysed but pulmonary infarcts never become pale due to extensive amount of blood.



Thank you