

# VITAL REACTION

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## **Definition**

***Changes in the body that occur after suffering an injury or any other harm to the body while the circulation and breathing are still present.***

Keep it simple ...

**VR is any sign of bodily  
harm/tissue damage caused by  
any external factor when the  
person was still alive...**

# VR

- forensically particularly important sign
- daily bread of the FP -

**Evaluating VR helps to determine whether the injury found at the autopsy was inflicted ante-mortem or suffered post-mortem AND if inflicted ante-mortem, how long before death it was sustained**

... still, there is a wide margin of uncertainty – range of possibilities can be offered but

# Extraz:

## Survival period after wounding

... what was the probable interval between fatal injury and the death?

... how long would the victim have been active even if still alive?  
(fight, run away, resist, defend... shock?)

- almost immediate death: brainstem, aortic arch

- longer interval: frontal brain lobes, abdominal aorta ... app.few min.

- stabbed heart – running a quarter mile(400m)? (left vs.right ventricle)

- very quick: truncus pulmonalis

- head injuries: variable interval/activity

*A dogmatic answer cannot be given – Seldom say never. seldom*

# Types of VR

**A.) GLOBAL vital reaction**

**B.) LOCAL vital reaction**

# I. GLOBAL VITAL REACTIONS

= systemic changes in living individual after wounding

## a) changes in blood circulation

- bleeding → blood loss/exsanguination → anaemia
- asphyxia → congestion of blood in systemic and pulmonary circulation
- embolism – thrombotic, fat, bone marrow, air, foreign bodies (bullet), amniotic fluid etc.

**b) changes in respiratory system**

**- aspiration of blood, vomit, water, foreign bodies, soil, gravel...**

**- detection of the air in lungs of a newborn by performing 'lung immersion test'**

**c) changes in digestive system**

**- swallowed food, blood, drugs, water, foreign bodies etc.**



## II. LOCAL VITAL REACTION

= response of tissues to local damage in living individual

a) primary

- necrosis

- haemorrhage

- reactions of enzymes – enables dating of wounds histochemically

ATPase – histochemical positivity after 1hour

non specific esterase – after 1–2 h.

aminopeptidase – 2-4h

acid phosphatase – 4-6 h

alcalic phosphatase – 8 h

- haemostasis

**b) secondary – acute inflammatory reaction and demarcation of damaged tissue (a-k-a inflammation)**

**c) tertiary – reparation**

**b) + c) after damage of the skin in living individual:**

**neutrophile leukocytes - after few hours, most after 8 h.**

**lymphocytes, plasma cells – after 12 h, more than neu leu after 16h.**

**histiocytes (macrophages), proliferation of fibroblasts – after 16h**

**non specific granulation tissue – a. 32 h.**

**capillary neogenesis – a. 3 days**

**(giant multinucleate cells – a. 4 days)**

**reticuline fibres – a. 10 days**

**collagenous fibres – a. 12-18 d.**

**definitive scar – after months**

# **Macroscopic signs of local vital reaction**

- **Haematomas/Contusions**
- **colour of abrasions**
  - **rose, brown/red-brown colour in the living**
  - **yellow, honey-like colour in the dead –****! CAVE ! – in areas of postmortem hypostasis...**
- **margins of lacerations /usually abraded/**
  - **rose colour/red-brownish**
  - **pale in the dead**

**IF any doubts: the microscopic detection of vital changes is necessary.**

# Examples

**VR in asphyxial death: congestion of blood**

**VR in CO intoxication: signs of asphyxia, cheery-red colour of PM  
hypostasis**

**VR in suicide by cutting the forearm vessels: anaemia**

**VR in fire-related death (burning): soot inhalation, crow's feet**