

Cardiovascular Shock:

Shock $\rightarrow$ $\downarrow$ BP $\left\{ \begin{array}{l} \downarrow \text{Cardiac Output} < \frac{HR}{SV} \\ \downarrow \text{Total Peripheral Resistance} \end{array} \right.$

① Hypovolemic: (Less volume)

Causes:-

- Blood loss
 - GI bleed
 - Abdominal Aortic Rupture
 - Trauma
 - Post partum Hemorrhage
 - Ectopic Pregnancy
 - Hemoptysis
- Non-Blood Fluid loss
 - 3rd degree burn
 - Vomiting, diarrhea
 - Bowel obstruction
 - Acute Pancreatitis
 - Diabetic Ketoacidosis (urine output $\uparrow$)

Compensations:-

- As Arterial Pressure decrease & BP $\downarrow$, there is a powerful sympathetic reflex, which causes:-
 - (a) Constriction of Arterioles, thus inc. Peripheral Resist.
 - (b) Veins & Venous reservoirs constrict thus maintaining adequate venous return.
 - (c) Heart Rate $\uparrow$, as high as 160-180 beats/min.
- Protection of Coronary & Cerebral Blood flow by reflexes.
 - $\Rightarrow$ The arterial pressure remains normal even in the presence of decreased Cardiac Output to protect blood flow through coronary & cerebral circulations.

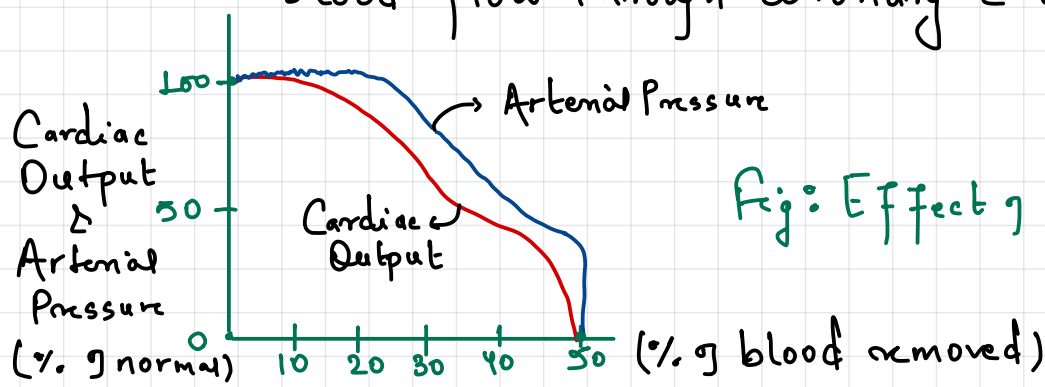


Fig: Effect of hemorrhage on CO & Arterial Pressure.

② Distributive Shock:

- Comprises Anaphylactic, Septic and Neurogenic Shock
- Blood volume is normal
- The capacity of circulation is increased due to intense vasodilation.
- It is also known as Warm shock.

Anaphylactic: Hyper sensitivity $\rightarrow$ Histamine
 $\downarrow$
vasodilation & inc. permeability
 $\downarrow$
loss of fluid $\leftarrow$ Venous Return and Cardiac output $\downarrow$
Shock.

Septic Shock: Uncontrolled Infection

- Bacterial toxins released $\rightarrow$ Generalised Vasodilation and increased permeability of Blood vessels.
 $\downarrow$
Blood volume decreases $\rightarrow$ Shock.

Neurogenic Shock: Sudden Autonomic Activity resulting in marked vasodilation.

- There is peripheral pooling of blood associated with fainting.
- Also known as vasovagal Syncope.
- Lasts for short duration & is Reversible.

Other Syncope Forms:

- **Postural Syncope:** due to change in position.
- **Micturition Syncope:** Fainting during urination due to Orthostasis and Reflex bradycardia
- **Carotid Sinus Syncope:** Pressure on Carotid sinus causes marked bradycardia and vasodilation $\rightarrow$ shock.

③ Cardiogenic Shock:

- In conditions like Myocardial infarction, congestive cardiac failure, and arrhythmias.
- In this type of shock, the heart fails to pump a sufficient quantity of blood to maintain normal tissue perfusion.
- Due to Extensive Infarction of Left Ventricle or diseases that reduce left ventricular function.
- Also called Congested Shock as the lung & Viscera get congested due to ineffective pumping of heart.

④ Obstructive Shock:

- Seen in Condition such as Cardiac tamponade, Cardiac Tumors, Pulmonary Embolism and Tension pneumothorax.

Stages:

(1) Non progressive / Compensated stage: Normal compensatory mechanisms restore the normal function without treatment.

(2) Progressive stage: External therapy is necessary.
- Shock will worsen and leads to death if untreated.

(3) Irreversible stage: All treatment & known modes fail to arrest the deterioration → Resulting in Death.