Physiology

Lec 16

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حيث كانت مجزرة رفح في ليلة 26 ايار انعكاسا على
حالة الضعف الصهيونية و تلقيها الضربات المتتالية فما
كان منها الا الرد بمجزة مأساوية على المدنيين وسط
صمت دولي

Circulatory shock

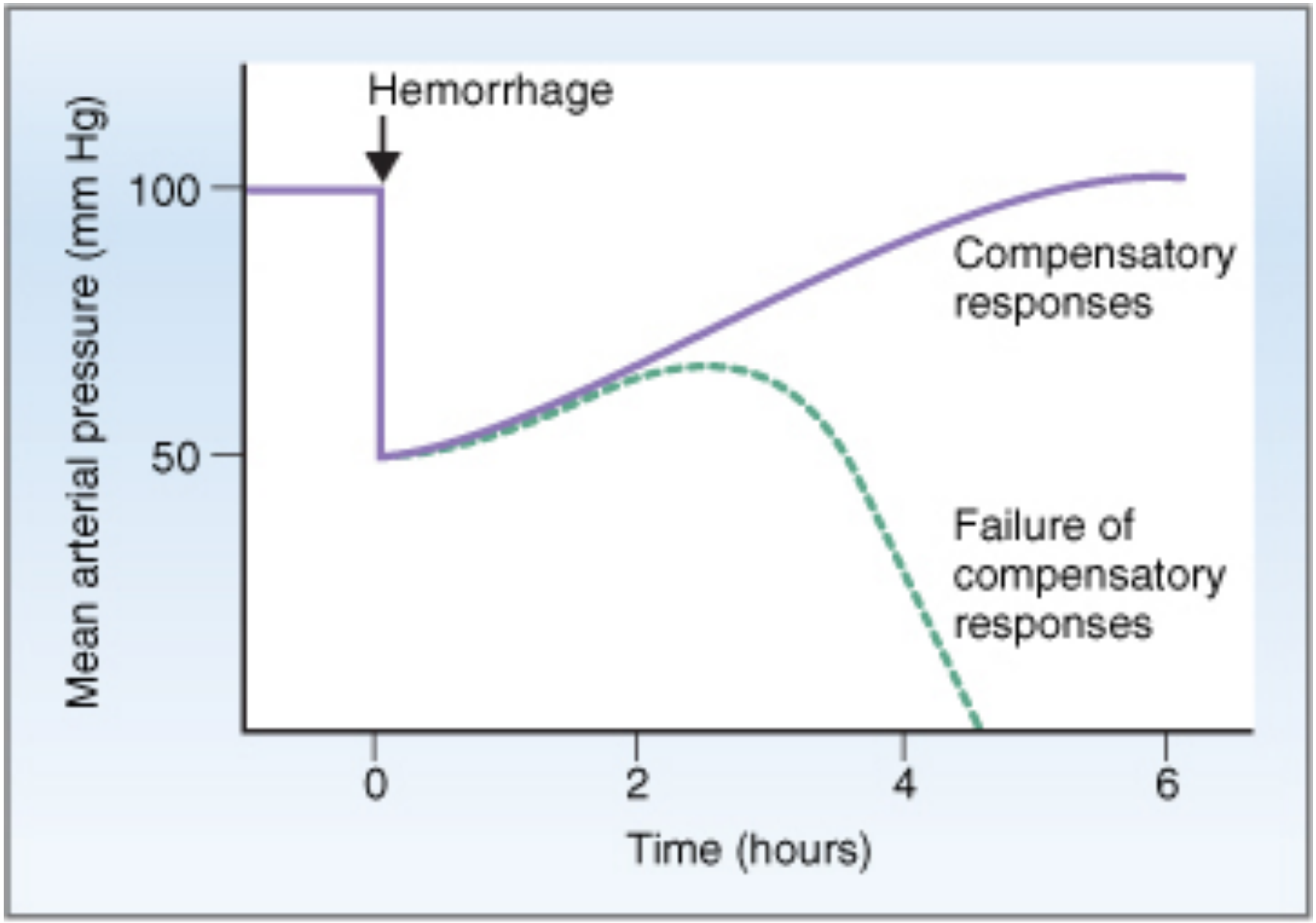
Definition: ***Generalized inadequate blood flow to the tissues leading to a tissue damage***

** هاي المحاضرة تعتمد على المحاضرات الماضية لفهم اكبر للمحاضرة

Types:

1- Non progressive - reversible

2- Progressive - ir-reversible


Hemorrhage
Mean arterial pressure (mm Hg)
100
50
Compensatory responses
Failure of compensatory responses
0
2
4
6
Time (hours)

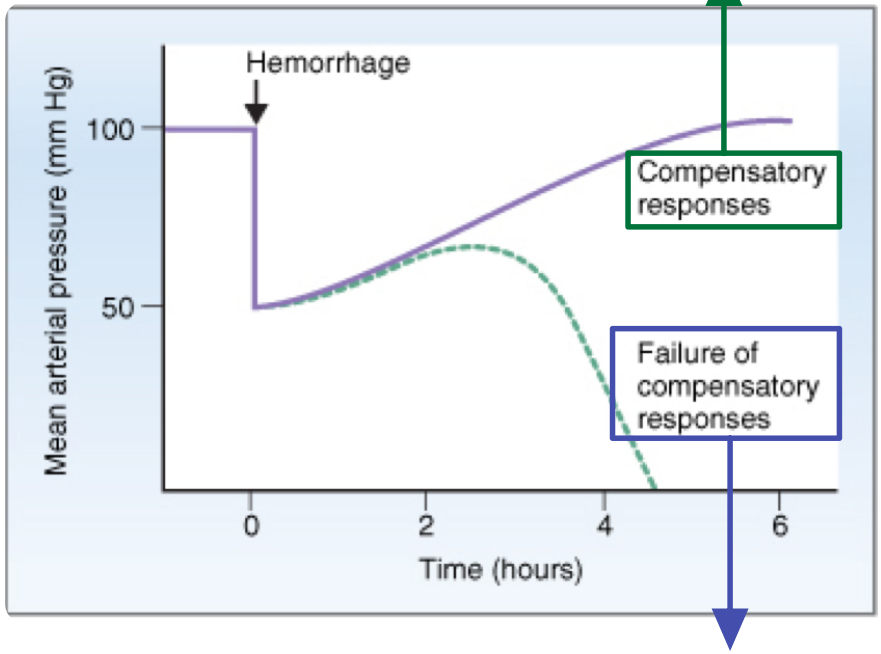
The blood pressure is related to blood volume:

High blood volume → high pressure

Low blood volume → low pressure,

because blood circulation is close system

The compensatory mechanism **success** to bring it back normal



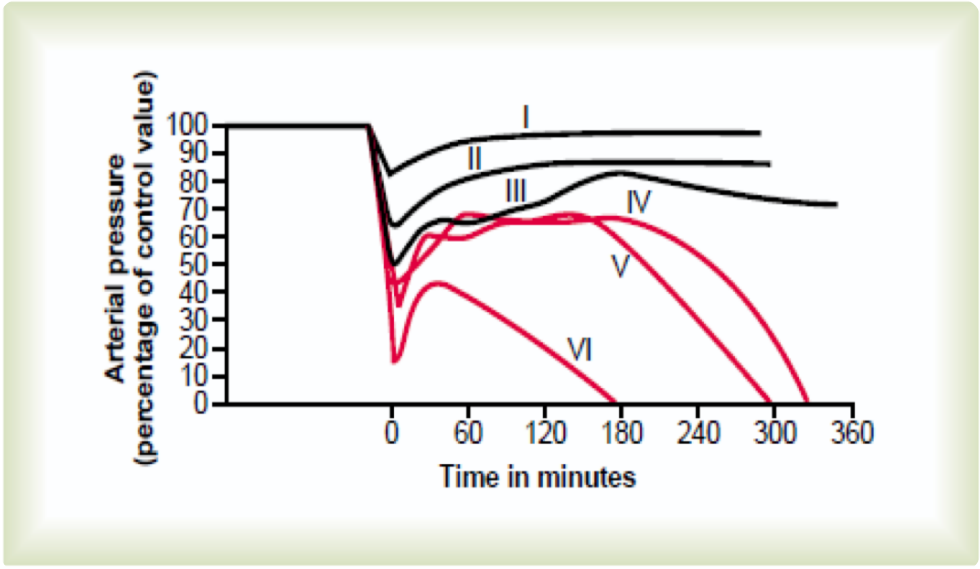
The compensatory mechanism **fail** to bring it back normal lead to **death**

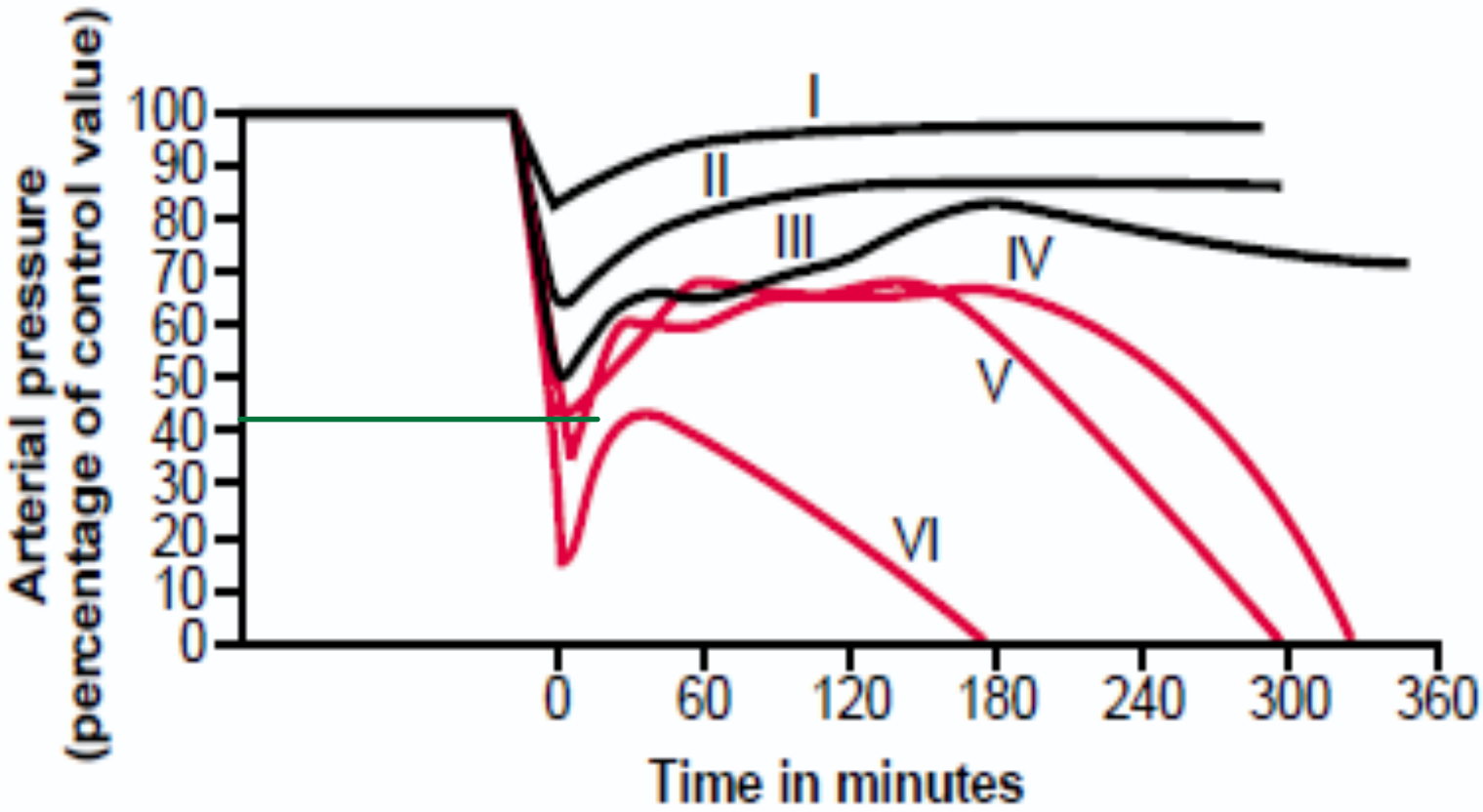
The of progressive or not progressive is determined by:

the magnitude of the drop of the blood pressure.

If blood pressure falls from **100 to 50** which means loss of **2-2.5** litres of blood the body is could overcome the condition

If the drop more than that the compensatory system couldn't handle the situation and death




Arterial pressure
(percentage of control value)
100
90
80
70
60
50
40
30
20
10
0
I
II
III
IV
V
VI
0
60
120
180
240
300
360
Time in minutes

- Factors that can lead to circulatory shock:

The pumping action of the heart (as we took in the last lecture)

- 1- Heart abnormalities – severely damaged pump

  e.g. myocardial infarction, valve dysfunction, arrhythmias,

  Took in last lecture

- 2- significantly reduced venous return

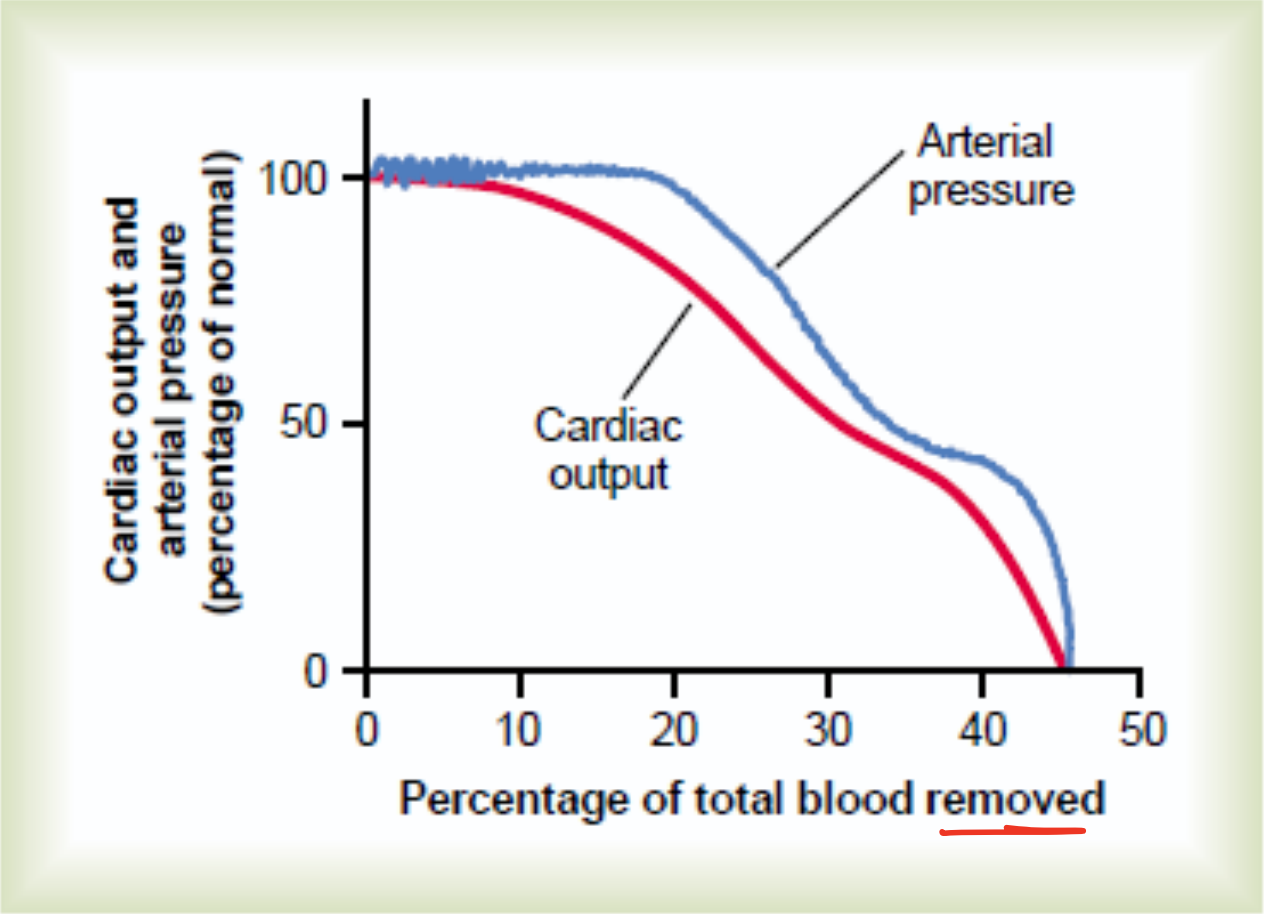
  e.g. Significantly reduce blood volume, decreased vascular tone, obstruction to blood flow → ex: tumours obstruction

Decreased vascular tone: relaxation of smooth muscle in vessels lead to dilation which lead to hypotension, severe dilation lead to circulation shock

The most important factor in blood pressure regulation is venous return

Hemorrhagic shock – The most common cause of hypovolemic shock

Most common type of shock

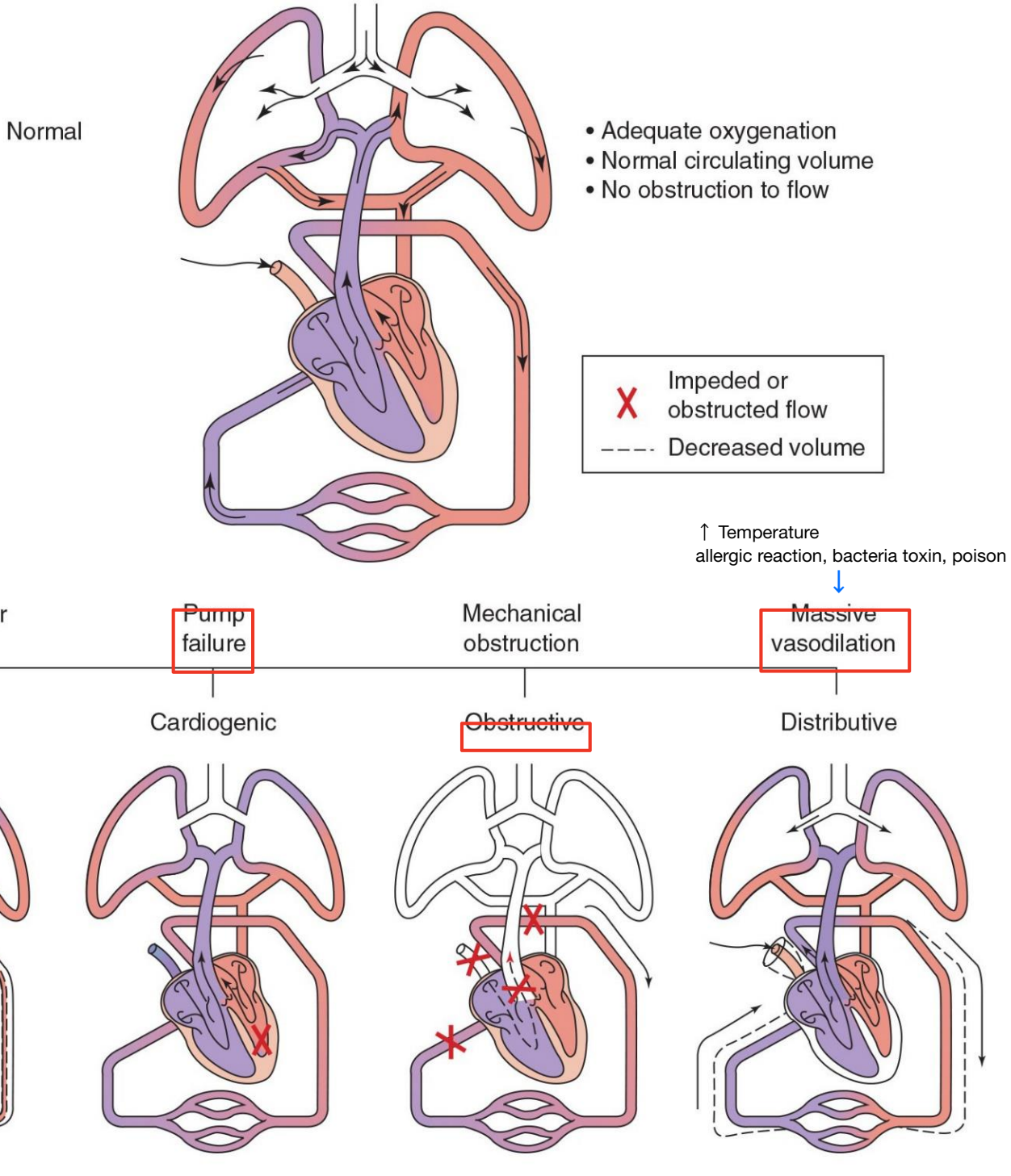


In the beginning of the condition the compensatory mechanism try to overcome the situation, but more blood is loss reaching a point of failure and death

Figure 24–1

Effect of hemorrhage on cardiac output and arterial pressure.

Types of shock.



Neurogenic shock:

1- Deep general anesthesia – depresses the vasomotor center
2- Spinal anesthesia – block of sympathetic out flow → Lead to decrease heart rate, vasodilation and decrease venous return
3- Brain damage cause vasomotor paralysis – prolonged ischemia
↳ no responses to changes
no regulation

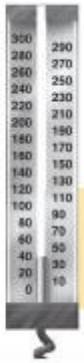
Anaphylactic shock:

Allergeic response leading to sharp and large decrease in cardiac output and BP – release of Histamine and like substances
1- Massive increase in vascular capacity due to veno-dilation
2- Dilation of arterioles leading to decreased BP
3- Increased capillary permeability leading to increased ultrafiltration and loss of plasma into interstitial space

Septic shock:“ blood poisoning”

Wide spread bacterial infection – most common in modern hospitals.

ما تبقى هي خرائط للمراجعة
كثير مفيدة 👌



Circulatory shock
(↓ mean arterial pressure)

↓ Cardiac output

Loss of blood volume

Loss of fluids derived from plasma

Severe hemorrhage

Excessive vomiting, diarrhea, urinary losses, etc.

Hypovolemic shock

↓ Cardiac output

Weakened heart

Cardiogenic shock

↓ Total peripheral resistance

Widespread vasodilation

Vasodilator substances released from bacteria

Histamine released in severe allergic reaction

Loss of vascular tone

Septic shock

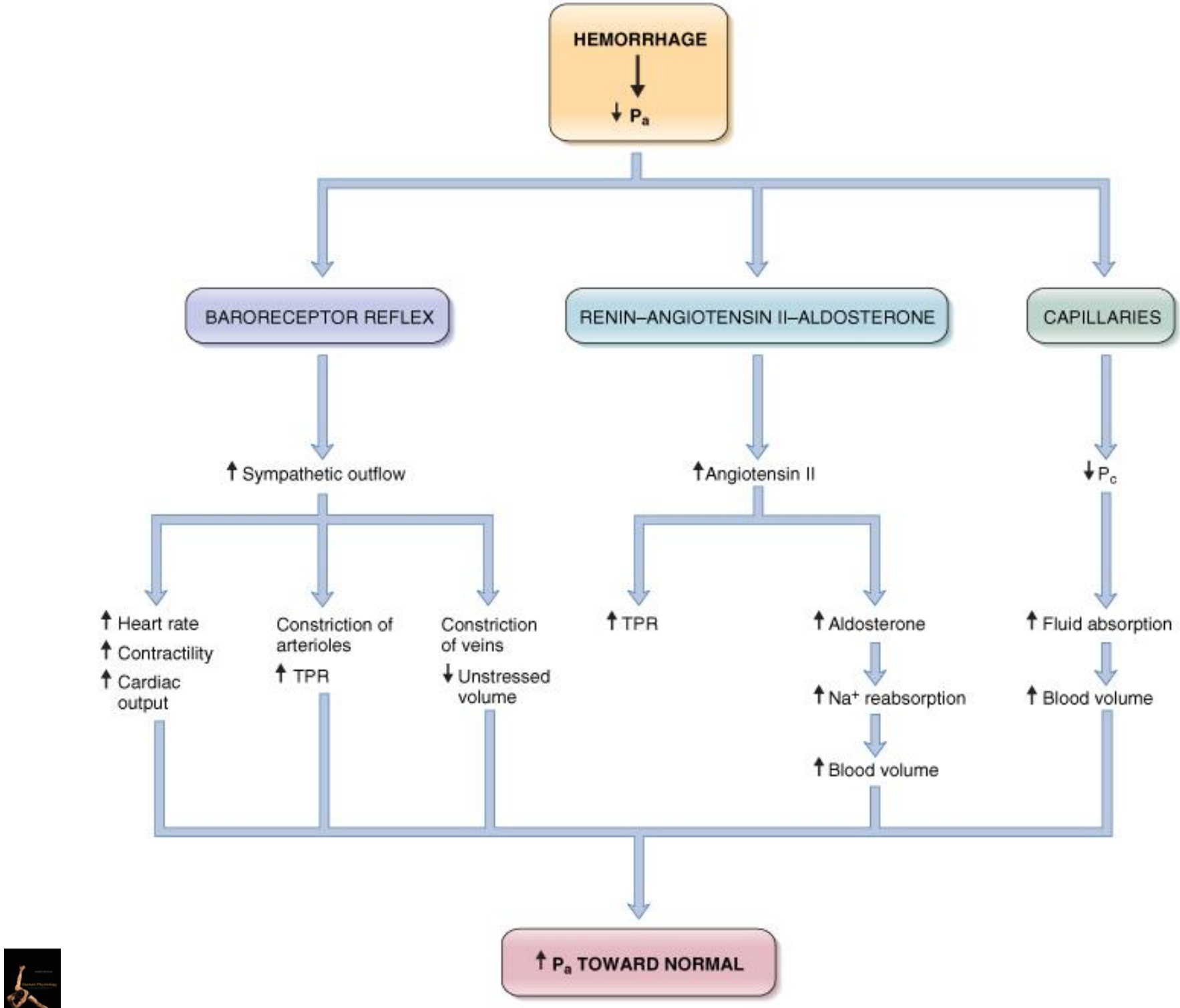
Anaphylactic shock

↓ Sympathetic nerve activity

Vasogenic shock

Neurogenic shock

Fig. 10-39, p. 384


HEMORRHAGE
↓ P_a
BARORECEPTOR REFLEX
RENIN–ANGIOTENSIN II–ALDOSTERONE
CAPILLARIES
↑ Sympathetic outflow
↑ Angiotensin II
↓ P_c
↑ Heart rate
↑ Contractility
↑ Cardiac output
Constriction of arterioles
↑ TPR
Constriction of veins
↓ Unstressed volume
↑ TPR
↑ Aldosterone
↑ Na^+ reabsorption
↑ Blood volume
↑ Fluid absorption
↑ Blood volume
↑ P_a TOWARD NORMAL

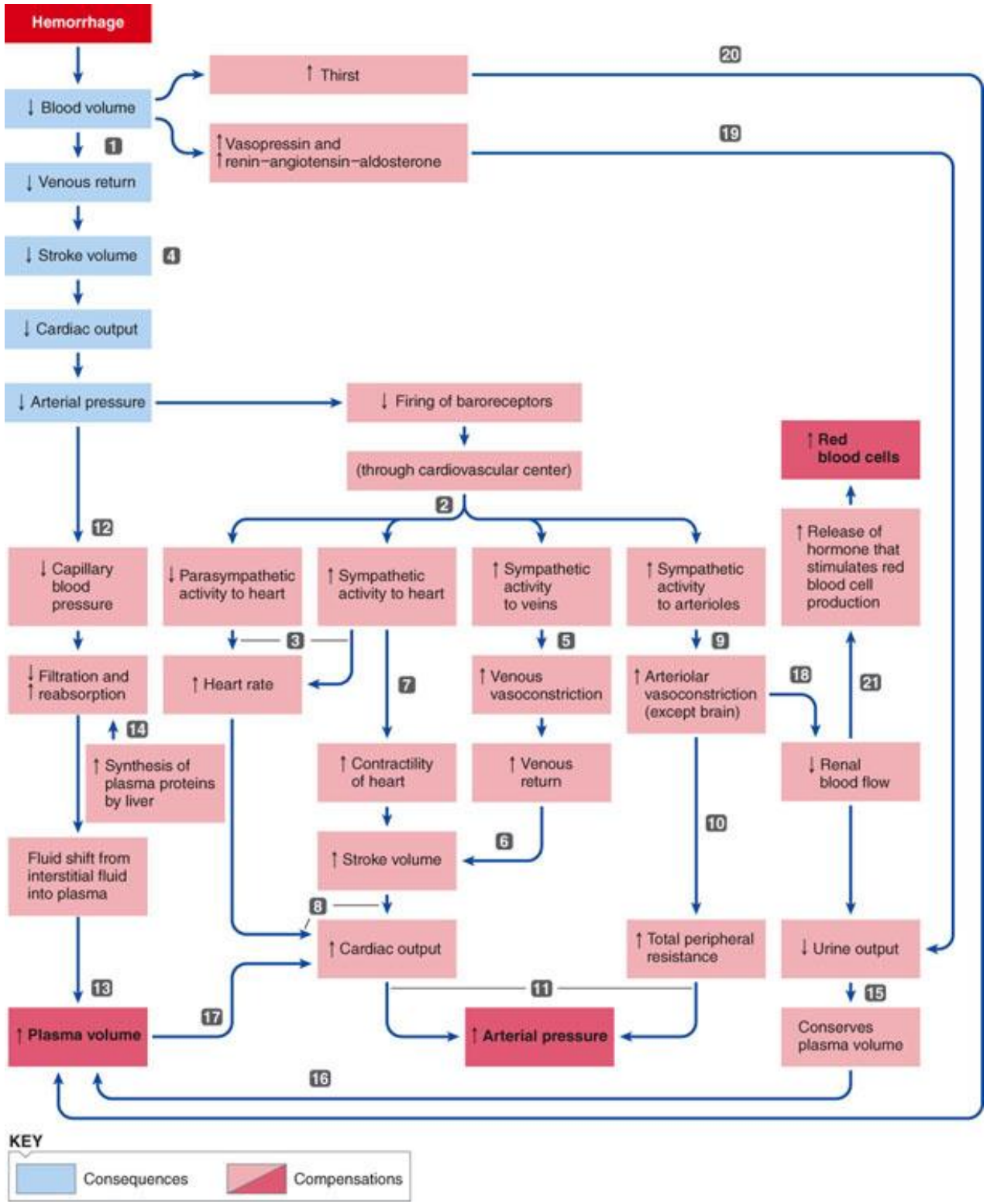


Fig. 10-40, p. 386