234

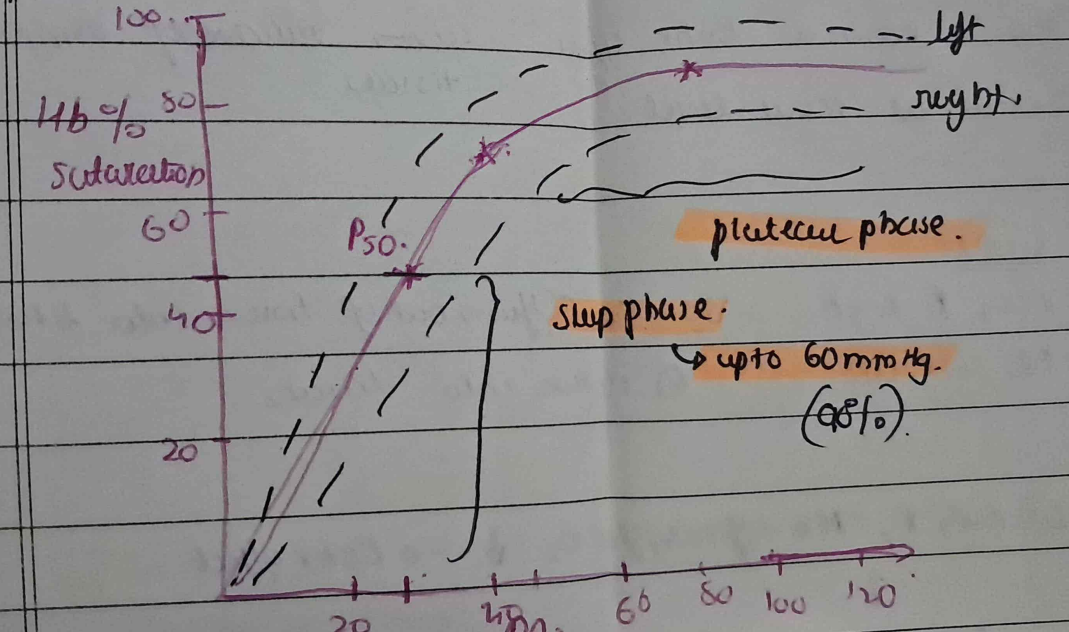
1.34 ml/g. 15g 20.1 ml

19 ml/100 ml.

ODC

This a curve btw. relation of PO_2 with % sat of Hb. It is sigmoid curve here, as PO_2 ↑ % saturation ↑

2 phases - steep phase & plateau



P_{50}

P_{50} = 25 mmHg.

P_{75} = 40 mmHg.

P_{95} = 100 mmHg

Left shift → Increases O_2 association & Hb affinity

- PO_2 ↑ temp ↓
- PCO_2 ↓
- H+ ↓
- PH ↑

Left shift → Increases O_2 association & Hb affinity

- PO_2 ↑ Lung ↓
- PCO_2 ↓
- H^+ ↓
- pH ↑
- Foetal blood → Hb affinity ↑ to oxygen

Right shift → O_2 dissociation ↓ Hb affi-

PO_2 ↓ Lung ↑ ~~&~~ 2,3-BPG - This binds with Hbβ chain so oxygen can't bind.

PCO_2 ↑

H^+ ↑

pH ↓

Bohr effect

~~The presence of~~

Increased PCO_2 decreases the affinity for oxygen by Hb.

This is known as Bohr effect - Causes release of oxygen into tissues.

→ occurs at tissue level.

at tissues

PCO_2 is high so CO_2 diffuses out of tissues into blood.

PO_2 is low. O_2 diffuses into tissues.

as PCO_2 ↑, Hb affinity for O_2 ↓. → Bohr effect

↓

further release of O_2 into tissues

↓

oxygen DC → shift to right.

Factors affecting → all the factors causing right shift ↑ Bohr effect.

Oxygen transportation

Steep phase upto 60mmHg.

small change in PO_2 will greatly ↑ % saturation.

at lung level → helps in easy uptake of O_2.

at tissue level → helps in easy unloading of O_2.

} ie, with small pressure changes % Hb also changes.

plateau

above 60mmHg, even when PO_2 ↑ % Hb also ↑ slightly.

(1) does not require very high PO_2

⇒ safety factor. → even significant decrease in lung function can allow normal Hb saturation.

(2) O_2 saturation remains constant even with wide fluctuations in PO_2 in alveoli

P50 → pressure at which % Hb saturation is 50%

= 27mmHg

P50 → pressure at which % Hb saturation is 50%

= 27 mmHg

O_2 transport

① uptake at lungs. → Venous blood = 40 mmHg. So oxygen diffuse from lung to blood.
alveolar cap =

② Transport in blood → plasma → dissolved = 0.3 ml/100 ml. (3%)
→ with Hb combination → oxyHb → 97%

Oxygen combines with iron in Hb.

Ferrous – 1 oxygen.

1 Hb → 4 ferrous ions = 4 oxygen → 1 Hb.

oxygen carrying capacity of Hb is = 1.34 mL / 1 g of Hb.

oxygen carrying capacity of blood = 19 mL/100mL not 20.1

- as 100% saturation ✗
- on 95% occurs

③ release at tissues

tissues = PO_2 = 40 mmHg.

Arterial blood PO = 95 mmHg.