

Pharma

Dr. AM Fouda, Professor of Clinical Pharmacology

Summaries of Ali Al-Murtada

ملخصات

الدكتور عبد المتعال فودة

أعداد: الطالب علي المرتضى



O₂ Therapy and ABG interpretation

* ABG (~~arterial~~ arterial blood gases) & pH + electrolytes + Gases

* Normal values:- pH: 7.35 - 7.45

CO₂ ~~partial~~: 35 - 45 mmHg

HCO₃: 22 - 26 meq/L

O₂ [PO₂: 80 - 100 mmHg

[O₂ saturation (O₂ bind to Hb) > 95%.

O₂ Therapy:-

* O₂ :- Pure O₂ or O₂ + He

* give O₂ if O₂ saturation < 92% or < 90% الأغلب
if reach 92% or above stop O₂ (تقريباً كل ساعتين)

Adverse effect of O₂

1- fire and explosive

2- irritation

3- Mucociliary function ↓ (أهداب تطهر الرئتين من القصبية)

4- CO_2 ~~retention~~ $\rightarrow$ normal PO_2 ↑ PO_2

$\text{CO}_2 \uparrow \Rightarrow$ acidosis [headache
blur vision
vomiting
coma
death] Haldan's effect

5- COPD: $\text{O}_2 \downarrow$, $\text{CO}_2 \uparrow$
عائنين على هذا

* if give O_2 (high Concentration and Pressure) to COPD Patient that lead to Central Suppression of respiratory system $\rightarrow$ apnea, give O_2 but low Pressure and Concentration

6- Premature Ventilation

* give O_2 in high Concentration to Premature infant may cause blindness, because retina is very sensitive to O_2 ($< 40\% \text{O}_2$) Retinopathy of Premature

7- high Pressure CNS Syndrome (CNS O_2 Toxicity)
Seizure, vomiting, headache

* Patient should receive O_2 ~~high~~ high concentration

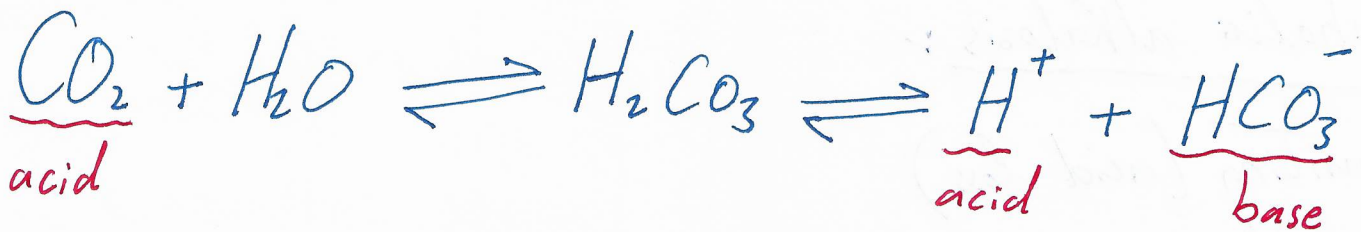
1- CO Toxicity

2- ~~Bum~~ decompression sickness (الغواص)

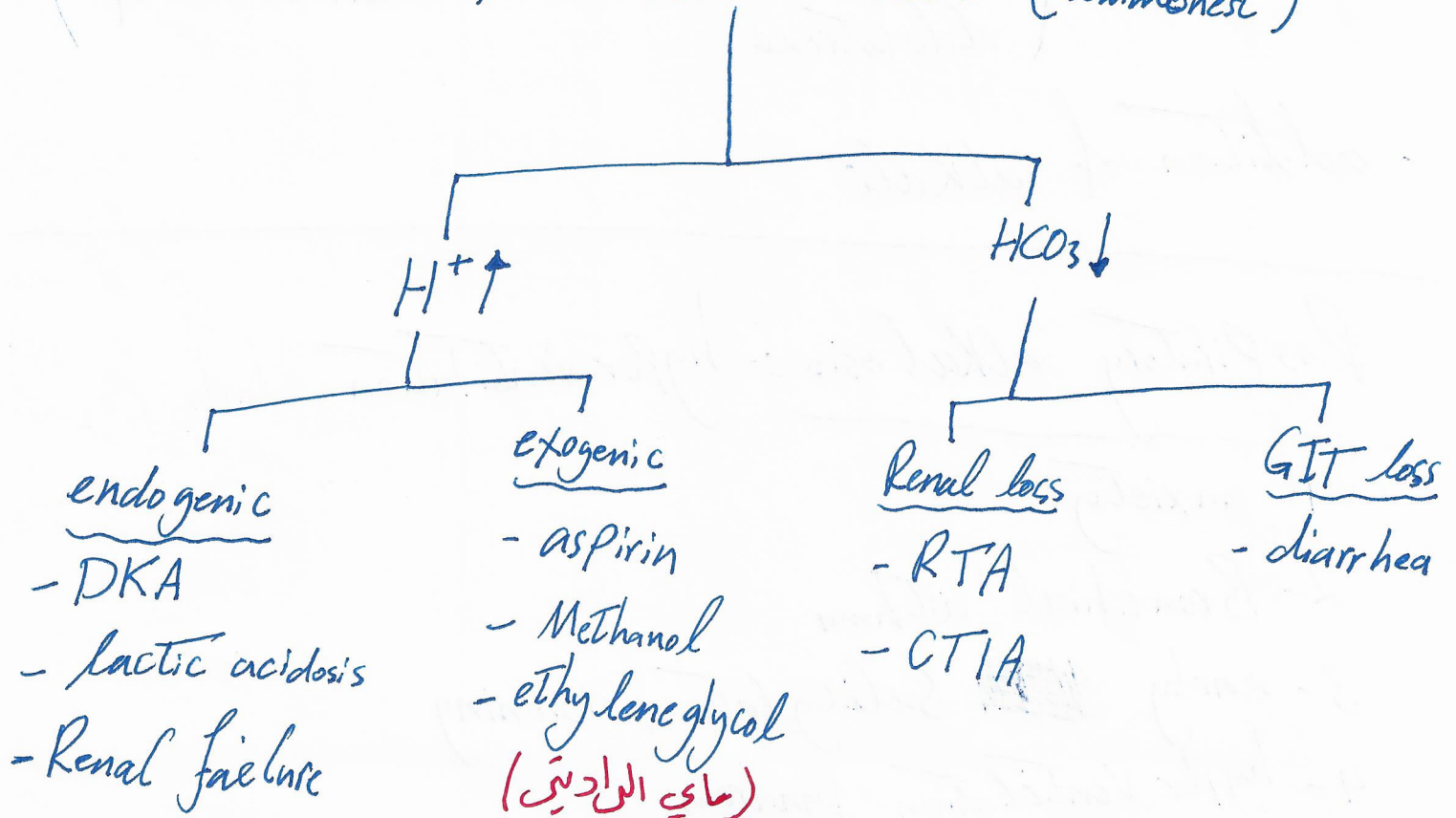
* Nitrogen dissolve sudden up in blood cause bubble (air embolism)

3- Gas gangrene (anaerobic bacteria die by O_2)

Acid-base balance



Metabolic acidosis (Commonest)



Respiratory acidosis :- hypo Ventilation

- 1- Respiratory Central depression
 - 2- COPD
 - 3- Guillain barre Syndrom
 - 4- Myasthenia gravis
 - 5- Sever acites
-

Metabolic alkalosis :-

- Vomiting (acid loss)
 - hypokalemia (Renal excrete K^+ with H^+ under effect of aldosterone)
 - addition of alkali
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Respiratory alkalosis :- hyper Ventilation Wash CO_2

- 1- anxiety
- 2- Bronchial asthma
- 3- early ~~Salicylate~~ Salicylate Poisoning
- 4- hyper Ventilation Syndrom

Diagnosis by ABG 8-

* By pH and CO_2

- if Matched means Metabolic

$\text{pH} \downarrow + \text{CO}_2 \downarrow \Rightarrow \text{Metabolic acidosis}$

$\text{pH} \uparrow + \text{CO}_2 \uparrow \Rightarrow \text{Metabolic alkalosis}$

- if unmatched means ~~Metabolic~~ Respiratory

$\text{pH} \downarrow + \text{CO}_2 \uparrow \Rightarrow \text{Respiratory acidosis}$

$\text{pH} \uparrow + \text{CO}_2 \downarrow \Rightarrow \text{Respiratory alkalosis}$

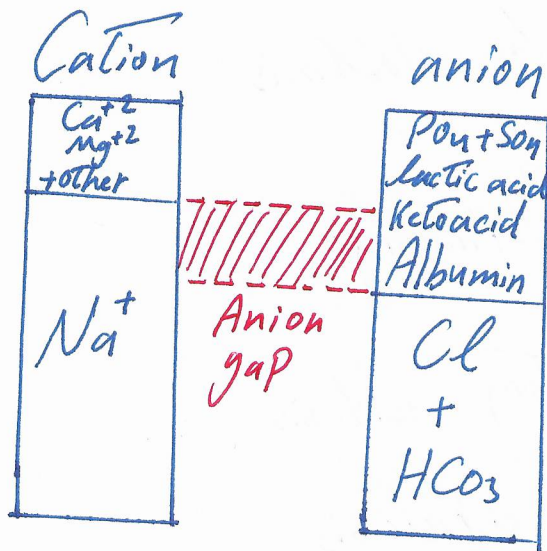
Note :- Metabolic acidosis can cause respiratory alkalosis and vice versa

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Anion gap

* Cations (+ve ions in body), Anion (-ve ions in body)

$$\text{Anion gap} = \text{Na} - (\text{Cl} + \text{HCO}_3), \text{ Normal } 8-10-12 \text{ meq/L}$$



* Major use for it to detect whether acidosis come from
increase H^+ or decrease HCO_3^-
PO₄ + SO₄
Ketoacid
lactic acid

* if low $\Rightarrow$ hypoalbuminemia

if high $\Rightarrow$ increase H^+ , hypochloremic acidosis

Non anion gap (with acidosis) $\Rightarrow$ hyperchloremic acidosis
 $\rightarrow$ loss HCO_3^- or receive large amount of normal ~~saline~~ Saline 0.9%

* hypoalbuminemia + non-anion gap $\rightarrow$ Underlying metabolic acidosis

Special cases may effect anion gap

- 1- Lithium Toxicity
 - 2- Multiple myeloma
 - 3- hyper-viscosity Syndrome ($\text{Na}^+ \downarrow$)
 - 4- Bromide Toxicity ((Cl^-) و (Br^-))
- decrease anion gap

