

Acuut respiratoir falen

Diagnose en management van acuut respiratoir falen

A. doelstellingen

- A. respiratoir falen definiëren en kunnen indelen
- B. de kenmerken en pathofysiologie van acuut respiratoir falen beschrijven
- C. strategieën voor zuurstoftoedieningen bekijken

B. welke bevindingen suggereren respiratoir falen?

- 1. tachypnee
- 2. gebruik van accesoire ademhalingsspieren
- 3. matige distress
- 4. eventueel ook
 - bewustzijnsveranderingen
 - agitatie
 - verwardheid
 - paradoxe ademhaling
 - tachycardie
 - cyanose
 - hypertensie
 - diaferese

C. welke evaluatie is nodig om vast te stellen of respiratoir falen bestaat?

1. Wat is de rol van onze ademhaling?

- verwijderen van overtollig CO₂
- oxygeneren van het bloed

2. de vormen van respiratoir falen

A. hypoxemie

- 1. kamerlucht PaO₂: ≤ 50 -60 mmHg
- 2. abnormale pO₂: FIO₂ ratio
- 3. voorbeelden van klinische oorzaken
 - ARDS
 - pneumonie
 - congestief hartfalen
 - interstitiele longziekte
- 4. Op Rx thorax: frequent infiltraten

5. oorzaken van hypoxemie

A. mismatch ventilatie/perfusie (meest frequent)

- 1. shunt: ventilatie naar de alveoli is geblokkeerd
 - pneumonie
 - atelectase

- 2. dode ruimte: wel voldoende zuurstof in de alveoli maar problemen in het capillair bed zodat er geen uitwisseling plaats kan vinden

- wat veroorzaakt toegenomen dode ruimte?

- 1. hypovolemie

2. verlaagde cardiac output
3. pulmonaire embolen
4. hoge druk in de luchtwegen: Bijvoorbeeld hoge beademingsdrukken van een beademde

patiënt

- B. verminderde diffusie
 1. interstitiele fibrose
 2. amyloidose
- C. alveolaire hypoventilatie
 1. hypercapnie
 2. sedativa
 3. alcohol
 4. hersenletsel
 5. neuromusculaire ziekte
- D. hoogte

B. hypercapnie

1. $\text{PaCO}_2 \geq 50\text{mmHg}$ met $\text{pH} < 7.36$
2. voorbeelden van klinische oorzaken
 - traumatisch hersenletsel
 - sedatieve medicatie
 - neuromusculaire ziekte (bijv myastenia gravis, Giant Barré syndroom)
 - slaapapnee
 - metabole stoornissen
3. Op Rx thorax eerder beeld van hyperinflatie
4. Hoe kunnen we weten of hypoxemie enkel veroorzaakt is door hypoventilatie (en stijging van de PCO_2)?

Wat moeten we hiervoor weten? De alveolaire-arteriele O_2 gradient

Hiervoor moeten we exact weten hoeveel zuurstof de patiënt krijgt. Dat is vaak niet mogelijk en varieert in functie van het middel waarmee de patient zuurstof krijgt

Een normale gradient is $< 20\text{ mm Hg}$. Indien deze gestegen is weten we dat enkel hypoventilatie niet verantwoordelijk kan zijn voor de hypoxemie. Er is dan ook een lokaal proces aanwezig.

C. mixed: voorbeelden

1. COPD
2. ernstig congestief hartfalen
3. multifactorieel bij kritische patient

Behandeling van acuut respiratoir falen:

- A. behandeling van de onderliggende oorzaak van hypoxemie
 1. vochttherapie
 2. verbeteren van de cardiac output
 3. verminderen van de beademingsdruk
 4. oplossen van de vaatobstructie (embolen)

B. zuurstoftoediening

Welke hulpmiddelen bestaan er om extra zuurstof toe te dienen? Hoe deel je ze in?

- A. naar zuurstofconcentratie
 1. laag: neusbril
 2. gecontroleerd: venturi masker
 3. hoog: masker met nonrebreathing zakje
- B. naar flow

1. hoog
2. gemiddeld
3. laag

C. Welke geneesmiddelen kunnen we gebruiken?

- beta2 agonist inhalatiemiddelen: werken sneller dan ipratropium
 1. aerosol (vernevelaar of nebuliser)
 2. dosisingestelde inhalator (puffer):
- inhalatie van ipratropium: werken langer dan beta2 agonist inhalatiemiddelen
 1. aerosol (vernevelaar of nebuliser)
 2. dosisingestelde inhalator (puffer)
- steroïden
- antibiotica
- antagonisten voor een eventuele intoxicatie toedienen

D. intubatie en mechanische ventilatie (overweeg ook CPAP (Continues Positive Airway Pressure) voor hypoxemie en NIV (Niet invasieve ventilatie) voor hypercapnie.

D. Samenvatting

- A. Acut respiratoir falen kan worden ingedeeld in
 1. hypoxie
 2. hypercapnie
 3. mixed
- B. Ventilatie/perfusie mismatch is de meest frequente oorzaak van hypoxisch acut respiratoir falen
- C. Hypercapnisch acut respiratoir falen wordt veroorzaakt door een verminderd minuutvolume
- D. Zuurstoftoediening wordt gebruikt om hypoxemie te behandelen
- E. Medicatieaanpassingen kunnen nodig zijn in acut respiratoir falen

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