Clinical pearls for Diagnosis

In the patients who complain of

ACUTE ONSET OF DYSPNEA

الموضوع ده مهم جداااا فى الطوارئ والاستقبال وحتى فى العياده الخاصه والمفروض تعرفوه زى اسمكم كده

Take brief rapid **history** as follow:

- **Onset /duration:**
  - Sudden-> (seconds/minutes)
  - Acute--> (hours to days)
  - Subacute (2 weeks to one month. chronic (> 1 month)
- **Frequency:**

Attacks or not

- **Association:**

Chest pain, cough, wheezy chest, hemoptysis, fever, palpitation, PND, LL edema

- **Psychiatric symp:**

Tingling & numbness of face, hands, legs, sense of suffocation

- **Weight loss** with cases of pleural effusion
- **Past history:**
  - Chest disease: Asthma, COPD, TB, malignancy, bronchiectasis.
  - Heart disease: CHF, CAD, RHD, etc
  - Arrhythmias: AF.
  - Dyspnea related to exertion
  - LL edema.

بعد ما تاخد الهستورى السريع ده

هتشوف ال↙↙↙↙↙

- Vital signs (pulse, BP, temp and Respiratory rate RR)
- O2 sat on room air
- Chest auscultation + percussion if needed

ركز اوى فى فحص ال chest طبعا مع هستورى كويس ---> مفتاح التشخيص

وبعدين هتحط الاحتمالات دى فى دماغك وتشوف مين فيهم ماشى مع ال history والexamination

✔ Pulmonary embolism

✔ Pulmonary edema (Cardiogenic & Non Cardiogenic [ARDS]).

✔ Pneumonia .

✔ Pleural Effusion.

✔ Acute asthma Exacerbation .

✔ Acute exacerbation of COPD.

✔ Pneumothorax

✔ Upper airway obstruction

✔ Psychogenic dyspnea

✔Acute coronary syndrome -- >Acute dyspnea + Typical ischaemic chest pain

✔Tachyarrhythmias -- >Acute dyspnea + palpitation --> (AF, SVT, VT)

✔ Hyperventilation without dyspnea ---> Acidotic kaussmal breathing -->

DKA, Renal failure, lactic acidosis, shock

للتفريق بين الاحتمالات وبعضها ↙↙↙↙

☑ Suspect PULMONARY EMBOLISM

When the patient has one or more of the following:

1. Is bedridden >3 days, irrespective of the cause (trauma, stroke, paraplegia, etc)
2. Have signs ± symptoms of DVT (unilateral leg swelling with tender calf)
3. Has recent pelvic or abdominal operation (e.g appendicitis, caesarian section, etc)
4. Has malignancy.
5. Has associated chest pain with the presence of other mentioned risk factors.
6. Has free chest on auscultation and O2 saturation is decreased ± accentuated P2 ± one or more of other risk factors.

➡ NEXT STEP:

Calculate **well's score** to make a suitable decision for both diagnostic tools & treatment.

If you can't estimate it --->

Stabilize the patient (ABC protocol)

Then request, D.dimer, Creatinine, ECG, and ABG:

➲If D.dimer is positive ---> CTPA

--> CT pulmonary angiography ± ECHO

--> Consider start of ttt + ICU admission

➲If D.dimer is negative --> not pulmonary embolism --> consider another diagnosis.

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☑ Suspect PULMONARY EDEMA

If the patient has all the following:

1. Rapid progressive dyspnea with tachypnea (marked respiratory distress)
2. Diffuse crackles or crepitations all over the chest.
3. Low O2 saturation while the patient is on room air.

The pulmonary edema is either ↘↘

Cardiogenic or Non-cardiogenic

↳Features supporting Cardiogenic P E:

▸ increased JVP ± congested neck veins.

▸ The patient is known to have Pre-existing Heart failure irrespective of the cause (CAD, DCM, RHD, etc),

There may be previous attacks or established Left Ventricular failure (PND, Cardiomegaly, S3 gallop, basal creps)

Or evidence of Systolic failure (low EF or severe diastolic failure.

▸the patient is known to have severe uncontrolled Hypertension with LVH

- Also patient known or suspicious to have Renal Artery Stenosis.

▸there is preceding acute chest pain

----> Suspicious ACS (STEMI, NSTEMI) Complicating with pulmonary edema.

▸there is preceding sudden palpitation

---> Acute tachyarrhythmia like AF on top of underlying heart disease.

↳Features supporting Non Cardiogenic Pulmonary Edema (ARDS)

▸ Normal JVP

▸ There is preceding precipitating factor

Like ↴

- Viral pneumonia or severe bacterial pneumonia.
- Inhalation of toxic smokes
- Sepsis (E.g UTI)
- Pancreatitis
- DIC

➡ NEXT STEP

a. Stabilization of the patient (ABC protocol, endotracheal intubation when needed)
b. Urgent CXR, ECG, ABG and ECHO
   + Basic labs + other specific labs or imaging according to the cause.
c. Urgent addmision at ICU (CCU for Cardiogenic)
d. IV lasix ± Transdermal Nitroderm patch is so beneficial only in cardiogenic pulmonary edema with high BP.

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☑ Suspect PNEUMONIA

If the patient has the following:

1. Associated fever, productive coughs ± chest pain
2. Focal crepitations ± bronchial breathing

E.g.

a. {inspiratory crepitations with bronchial breathing heard over right middle lung zone
   ---> Q ***Rt middle lobar pneumonia***}
b. {Inspiratory crepitations ± bronchial breathing heard bilaterally and scattered asymmetrically on the chest ---> Q .***Bronchopneumonia...***

N.B.

Diffuse symmetrical crepitations --> Pulmonary Edema.

➡ NEXT STEP

a. Stabilise the patient (ABC protocol)
b. Request CXR or CT chest (without contrast), ABG, CBC.
c. Calculate CURB-65 score or CRB-65 score and make decision of admission& treatment according to the score

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☑ Suspect "PLEURAL EFFUSION"

If the patient has the following features:

1. Acute onset (within days) or Subacute (within few weeks) --->dyspnea.
2. The dysnea is usually not marked, as it is often due to unilateral effusion,
   If it is bilateral significant effusion -->the patient will be distressed

N.B. Bilateral effusion is less common.

- On examination, there is unilateral decrease in the air entry with dullness to percussion هاااام

- Associated or preceding features of underlying causes.

- ✓ productive cough ± hemoptysis + fever + weight loss --> TB
- ✓ Weight loss + cough & hemoptysis in heavy smoker --> malignancy
- ✓ Preceding Cough + fever --> Parapneumonic effusion.
- ✓ known liver cirrhosis -->Right pleural effusion --> hepatic hydrothorax
- ✓ Anasarca (Cardiac , VS Hepatic Vs Nephrotic syndrome)

NEXT STEP:

a. CXR to confirm the effusion, then admit
b. Do diagnostic pleural effusion...

- ▸Chemical (PH, Protein, LDH, Glucose, ADA),
- ▸bacterial (blood culture + Gram stain) + Ziehl Nelsen stain for TB + Culture for TB.
- ▸Cellular (neutrophils or lymphocytes or Malignancy cells)

c. CT chest with contrast

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☑ Suspect Acute Asthma Exacerbation

If the patient has all the following features:

1. Known asthmatic whether on treatment or not.
2. Expiratory rhonchi on auscultation.
3. Tachypnea > 18 , tachycardia > 100
4. Accessory muscle use
5. Can't speak because of dyspnea
6. O2 saturation < 95%

N.B

If the patient has acute asthmatic attack with tachycardia > 100, RR > 30 , Accessory muscle use, Can't complete one sentence + O2 saturation < 90% on room air ↴↴↴↴↴↴

"Acute Severe Asthma"

NEXT STEP:

- use the aforementioned data to differentiate between different degrees of Asthma exacerbations and manage accordingly...

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☑ Suspect Acute Exacerbation of COPD

If the patient of COPD has one or more of the following:

1. increasing dyspnea& tachypnea despite ttt
2. increased purulence of sputum
3. Increased volume of sputum.
4. signs of respiratory tract infection either upper or lower with above mentioned features (Search for underlying Pneumonia)
5. Signs of respiratory failure
6. CO2 retension: confusion, Cyanosis, warm hands, pounding Pulse.

NEXT STEP:

a. If signs of CO2 pretension are present
   --> Rapid stabilization of the patient using ABC protocol (with low flow O2) till admission to ICU

b. ABG, CXR or CT chest.

☑ Suspect "PNEUMOTHORAX"

➢**In non-traumatized patient complaining of:**

➲ Sudden onset of dyspnea ± chest pain

+

➲ Unilateral hyperresonance on percussion

+

➲ ↓ air entry on the same side.

➢ It could be primary or secondary

▸**primary**: without underlying lung disease ---> due to rupture bleb

The patient is typically smoker

The pneumothorax may be precipitated by cough.

▸**Secondary:** due to underlying lung disease e.g Emphysema.

➢If the patient has sudden onset of rapid progressive dyspnea and tachypnea

with unilateral signs of hyperresonance (on percussion)

+ shift of the trachea to the opposite side

+ ↓O2 saturation...

Suspect: ***TENSION PNEUMOTHORAX***.

N.B: PNEUMOTHORAX is a common complication of CVP insertion and chest tube insertion.

NEXT STEP:

a. Stabilize the patient if Suspected tension Pneumothorax (ABC protocol)
b. Urgent CXR: differentiate between simple pneumothorax and tension pneumothorax

↳If Tension --> Urgent chest tube drainage of the air under water seal.

↳ If simple: management according to Size of pneumothorax (< or > 2 cm)

+ Primary or secondary

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☑ Suspect "Acute Upper Airway Obstruction"

➢ If the patient has the following features:

- Noisy characteristic inspiratory sound heard by ears (Stridor)

لازم تكون بتعرف تميزه لانه -- > مفتاح التشخيص.

➢Acute causes are either

a. Epiglottitis: Suspect if stridor is preceded by sore throat, Fever, drooling of saliva.

b. FB: foreign bodies: common in pediatrics, very rare in adults

c. Anaphylaxis : suspect if preceding drug intake
+ Angioedema ± urticarial rash + shock

Next step:

Stabilization of the patient (ABC protocol)

In some cases: tube insertion is difficult so it needs tracheostomy.

↳Epiglottitis --> give inhaled adrinaline by nebulizers, IV steroids + IV antibiotics

↳ Anaphylaxis: give IM adrinaline

+ IV steroids + IV antihistaminic.

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☑ Suspect "PSYCHOGENIC DYSPNEA"

If the patient has the following:

1. Apparently healthy patient particularly in young females
2. Normal lung auscultation despiteTachypnea.
3. Normal O2 saturation or even ↑ on room air.
4. associated features of anxiety
   Like: tingling& numbness of arms ± legs ± face
5. Carpopedal spasm is common due to excess CO2 wash -->alkalosis
   --> Shift of calcium to intracellular compartment --> hypocalcemia
   --> It is confused with Tetany

معظمنا بيغلط فيها ويفتكرها tetany

➢The acute dyspnea due to psychogenic cause is often due to famous psychosomatic disease which is called

"***PANIC ATTACK*** or similar disease called

"***PSYCHOGENIC HYPERVENTILATION SYNDROME***"

In both of them, the patient has other characteristic features:

Palpitation, chest pain,

Sense of impending death = Sense of suffocation, parasthesia in peripheries or face, sense of abdominal discomfort, dizziness, fainting.

دى حاجات مشهوره فى الاستقبال هتشوفوها كل يوم ،،، المريض ده ياخد حقنه مهدئ (فاليوم او دورميكم) جرعه صغيره وتكرر لحين انتهاء النوبه ،، ولابد من ابلاغه للكشف عند دكتور نفسى لتقييم الحاله.(ضرورى)

N.B. PSYCHOGENIC DYSPNEA is a diagnosis of Exclusion,

So, you have to exclude all other causes by history & exam ± investigations

Particularly Pulmonary embolism which may come in similar presentation

NEXT STEP: Just to exclude other causes

ABG, ECG, CXR

± D-dimer if you can't differentiate it from pulmonary embolism

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☑ Suspect "Acute Coronary Syndrome"

➢ Some patients with acute Coronary Syndrome" including STEMI, NSTEMI & UA present with acute dyspnea in association with chest pain

Note that the character of chest pain and presence of risk factors is the key of Diagnosis & management

NEXT STEP:

ECG ± Troponin

Admission to CCU

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☑ Suspect "Acute Tachyarrhythmias"

➢ Some patients with acute tachyarrhythmias such as AF and V tach

Present with acute dyspnea in association with palpitation...

Note that: palpitation is the key of diagnosis.

NEXT STEP:

Stabilization of the patient

Then Urgent ECG + monitor

---> Admission to CCU.

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Hyperventilation without dyspnea

➢Some patients present to you by

Hyperventilation without dyspnea i.e Kaussmal breathing (acidotic)

This is due to metabolic acidosis

➢**Causes**

1. DKA ---> dehydration, polyuria, ± confusion in Diabetic patients

Next step: Random BG, ABG, acetone in urine.

2. Renal failure: both acute & chronic ---> Oliguia, volume overload, etc

Next step: ABG, renal profile

3. Lactic acidosis:In patients with shock or with sepsis

Next step: ABG, S .lactate, CBC, CRP, blood culture

All stabilization (ABC) then transferred to ICU.

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لو مش قادر تحدد التشخيص وفى نفس الوقت عايز

To save the patient from serious causes

اعمل الآتى↙↙↙↙↙

CXR, ECG, ABG, Tropoin, D.dimer, CXR.

خلى بالك d.dimer & troponin بيطلعوا ايجابيين فى حالات الpneumonia

ملحوظه هاااامه : الكوفيد سبب مهم جدااا الايام دى لل acute dyspnea وهيندرج تحت الpneumonia

Example:

63 years old man came to the ER complaining of acute onset of dyspnea associated with tachypnea

This was preceded by retrosternal compressing chest pain associated with sweating 12 hours ago

The patient is diabetic on insulin and smoker

On exam

BP: 140/90

HR: 110 regular

RR: 26

Temp: normal

Chest: bilateral inspiratory basal & mid zone crackles

Heart: muffled heart sounds

JVP: 6 cm

No LL edema

O2 sat: 89%

How would you assess?!

Answer:

The patient presents with typical chest pain with risk factors for CAD

So, it is highly suspicious for ACS (either STEMI or NSTEMI)

Then he develops new onset of acute dyspnea with tachypnea with lung crackles + hypoxia + high JVP

So, he is likely developing cardiogenic pulmonary edema as a complication

You should estimate Killip score

This pt needs urgent admission at CCU

Urgent Oxygen therapy, if hypoxia is not corrected, he might benefit from CPAP mask

IV diuretics

ACEi, BB

Anti -ischaemic measures

Thrombolytic therapy versus

PCI (the decision will be taken by cardiologist

After establishment of ACS DX by ECG ± tropnin

CXR to detect pulmonary edema

Bedside ECHO

After stabization of the condition, he will need Coronary angiography

This patient must be assessed for certain complications like new VSD or papillary muscle rupture with acute mitral regurge

Vital signs must be monitored as he might develop shock and needs

IV intropic agents

±

IABP

Then Cardiothoracic consultation