

PLEURAL EFFUSION

No.

- Abnormal / excessive accumulation of fluid in Pleural space

normal = 0.01 ml/kg/hr [$\approx$ 15 ml per day]

- Pleural Effusion → symptomatic clinically when > 500 cc.

→ detected on X-Ray AP > 300 cc

→ " " X-Ray lat > 150 cc [Most Sensitive]
> 50 (الدكتور قال)

→ " " $V/S > 70$ cc (Amblyops 20 cc)

→ " " (T) 20 cc (" 3-5 cc)

- C/P: $\square$ Dyspnea $\rightarrow$ the only sx related to severity

↳ depends on Rate and Amount of Fluid.

[2] Dry Cough.

3] Pleuritic Chest Pain.

• Exam: ① Inspection = Asym chest movement, thoraco abd.
respiration, Tachypnea and Resp Distress.

(2) Palpation : ↓ chest movements, ↓ expansion.

Trachea shifted to opposite side.

③ Percussion = STONY DULLNESS

④ Auscultation = ↓ Resp Sounds, ↓ Resonance.

NO FRICTION RUB. (Why?)

injury or inflammation on pleura

Date.

No.

Causes;

Exudative

Transudative

↑ capillary permeability

① Pneumonia

② TB

③ Empyema

④ Carcinoma / Lymphoma

⑤ mesothelioma

⑥ PE

⑦ Pancreatitis

⑧ ~~Hemorrhage~~ Hge Eff.

⑨ Chylous Effusion

⑩ Connective T. dz

① CHD / Pericarditis

② Liver Cirrhosis

③ Nephrotic Syndrome

④ Hypoproteinemias

+ Rare 1. CSF Leak

2. Peritoneal dialysis

3. Uro Thorax

Urino thorax

no $\uparrow$ destruction or obstruction

Urine in pleural space

↓ Mesothelioma: malignancy in pleura (Pleural not Pulmonary lesion), hx of Factory work = Asbestosis.

↓ Peritoneal dialysis → by dextrose

So, findings will be $\downarrow \downarrow \downarrow$ everything EXCEPT Glucose.

↓ Uro Thorax → Pt w/ hydronephrosis, kidney at level of lower 2 ribs, covered by pleura, Fistula.

It's the ONLY transudate cause w/ LOW pH.

↓ Exudate but appear like Transudate;

① Meig's #

② Hypothyroidism.

③ early Adenocarcinoma

④ PE

Benign ovarian T. ascites pleural eff

①

• Classification according to severity by X-Ray :

- minimal = Obliteration of Costo phrenic angle.

- mild = cover the lower (2) ribs.

- moderate = " " " (4) ribs.

- severe = " " " (6) ribs.

- massive = White Lung (cover all the lung).

• ddx of White Lung :

fractures not shifted

1. Massive Pleural Effusion

2. " Pneumonia

3. Large Mass

stony dullness

4. PE not dullness

Huge Collapse

history of patient +

trachea shifted

• Classification according to Fluid Analysis

Exudate

Transudate

Protein > 3 g/dl

< 3 g/dl

E/S Protein > 0.5

< 0.5

LDH > 200 IU/dl

< 200 IU/dl

E/S LDH > 0.6

< 0.6

Sp. gravity > 1.016

< 1.016

Colour Cloudy

Clear

Diagnosis = Diagnostic Thoraco Centesis.

Look at any level?

* the most dullness area, Not above or low,
In Midway.
 - Above → Fluid accumulate down
 - below → Injury to liver.

* Above the Rib, bc below it there's Neuro-vascular bundle. (avoid injury)

* at InterBScapular OR post axillary line.

* Needle → Prependicular Downward.

! Colour:

- Clear = Transudate, Cloudy = exudate.

- Purulent = Para Pneumonia or empyema

- Chylous = Chylo-thorax or pseudo-Chylothorax or pus

- Bloody = hemothorax or PE or malignancy of

- Particles in the Fluid: - Malignancy

CT d2
 ↳ connective tissue

- Black Fluid:

- ① Fungal Infection
- ② Lung AdenoCarcinoma
- ③ Old hemothorax
- ④ Met. Melanoma (Rare)
- ⑤ Pancreatic Pleural Fistula
- ⑥ Charcot Lavage

NGT * Iatrogenic *

one side & ribs injury

character 1) Cub, pleural space Cub →
pleural space. 2 C 4

Date.

No.

• Fluid Analysis:

1) CBC

2) Chemistry

3) pH.

4) Culture and Sensitivity

5) Cytology →

100-200 cc.

id.

first time presentation with effusion
Cytology → for malignant cells.

Culture and Sensitivity → for Pneumonia and empyema.
(Most common org. found is Streptococcus Melleri)

pH: normal in pleural space = 7.6

transudate = 7.4 to 7.55

exudate = 7.3 to 7.5

if < 7.2 !!! 1. Malignancy 4. RA

need chest tube for drainage 2. Empyema 5. TB

3. esoph. rupture 6. Collagen dz

• CBC:

① total # of WBC: if ↑↑↑ = empyema:

> 10 000 = 1. Para Pneumonia

3. Pancreatitis

2. PE

4. Collagen Vas. dz

↳ RA, SLE

② If mainly LYMPHOCYTES:

1. Malignancy

3. TB

5. Chylothorax

2. Lymphoma

4. Sarcoidosis

6. CT dz

most common of hospital acquired

pneumonic + effusion $\rightarrow$ Staph aureus

Date.

No.

③ if mainly NEUTROPHILS ; (Acute Infection)

1. Simple Para Pneum. / بنفوق بنفم با Glucose
2. Complicated "
3. Empyema ($\downarrow$ pH < 7.2)

④ if mainly EOSINOPHILIA ;

1. Parasitic Infection
2. Fungal
3. Reactionary w/ Pneumothorax
4. Asbestosis
5. Drug-Induced
as Trimethoprim and Nitrofurantoin.

⑤ Hct : Hemothorax Vs Hemorrhagic Effusion

$\therefore$ Hct $\geq 50\%$
of blood Hct

$\therefore$ Only Blood

$\therefore$ trauma

$\therefore$ ttx = Chest tube

$< 50\%$

Fluid + Blood

malignancy

Pleurocentesis

200-300cc Blood

② total protein , LDH .

light criteria. $\text{eff} \sim \text{eff}$

	eff : serum protein ratio	LDH in eff	eff : serum LDH ratio
Transudative	$\leq .5$	≤ 200	$\leq .6$
exudative	$> .5$	> 200	$> .6$

(Transudate) LDH $\sim$ eff
exudate. protein $> .5$
→ called pseud exudate

LDH $\sim$ eff $\sim$ eff

* error $\sim$ eff $\sim$ eff
(الحبر بابت نتیجه)

* eff $\sim$ eff $\sim$ eff

Translate $\in 1.2 \leq 2^1 1.2$

exudate $\in 1.2 \gg \sim \sim$

Trans $\angle D17$ " 

Transudat $\neq$ LDH Qu ngư q

$U \rightarrow \text{exudate} \leftarrow \text{protein}$ $U =$

Translating to SAG ۱۱

HFr₂ & Acute diuresis

۱) Transudative PE لے سرِف سے خُند

primarily congested
edema

حافظ لائبریری وٹائی یوم

total protein - 2 (ins)

Concentrated $\Rightarrow$ مختلص

③ Amylase :

1 Amylase enzyme
2 pancreat no
3 esophagus

salivary Amylase

which is enzyme derived

→ pancreatic → pancreas

→  → esophagus.

④ Cholesterol + TG + ADA

↳ if milky

white

chylothorax pseudochylothorax

chylot TG

pseudochylot

⑦

و سببها عجز الكوليسترول اذا لم
عالج :- Cholesterol eff
Chronic Rheumatoid eff
و هو عند RA و هو حاد
سريع - من 300-400cc
حار و ~~سريع~~ حار
milky خلاصه هو

ADA → adenosine deaminase

يطلبوا في حالات TB ، عرق
pleural eff عند pneumones
history cough, no TB
night sweat, weight loss, fever

negative culture
منعك، منقار، وأنت عينه من (منقار)
منقار (منقار) منقار (منقار)

منقار منقار PCR منقار (منقار)
منقار عينه من fluid منقار (منقار)
منقار (منقار) منقار (منقار)
منقار (منقار) منقار (منقار)

glucose, total protein, LDH,
albumin (amylase منقار)
منقار منقار منقار منقار
منقار منقار

oLis normal ~ Hglucose 1, 2
simple parapneumonic

very low $\Leftarrow$ glucose 1, 2

protein $\uparrow$ $\searrow$

complicated parapneumonic

very $\downarrow$ $\Leftarrow$ pH 1, 2

empyema.

protein $\Rightarrow$

not nec
exudate
 > 3

2.5-3.5 $\Rightarrow$ light

< 3 Transudate
cơ thể

Complication:

- ① Expansion pulmonary edema
- ② infection
- ③ below the Rib C injury
- ④ injury of spleen or liver
- ⑤ hemothorax (blood)

management:

treatment of cause:

empyema → chest tube
Antibiotic (دواء) PMS
جراحى
جراحى

hemothorax (Blood) →

chest tube (Blood)

إذا سفل في active blood يعني

عيلات بيتر - Bleeding

chylothorax → use malignant pleural effusion
إيف

pleurodesis →

بازق في pleuro visceral parietal

بعض ، بعضه حاد

عن طريق chest tube

طريق عا - إفلو لا

الحق وخضرة الكلى حيازة

بعضه حاد الأنيوية

س الأنيوية - وازق بعضه

ببسط - نيو - عنه الكلى Pleural eff

Causes of Unilateral pulmonary oedema?

- ① Re expansion pulmonary
- ② pneumothorax . (عند
أف
واله)

Pneumonia

inflammation of lung tissue distal to terminal bronchiole associated with radiological & clinical signs.

26/5/21 x-ray &
pneumonia

* pneumonia more common in males.

* the organism which more common cause pneumonia is streptococcus pneumoniae.

classification of pneumonia:

epidemiological classification.

① community acquired pneumonia.

② hospital ~ ~

③ ventilator associated pneumonia (VAP)

④ health care associated pneumonia.

→ hospital acquired pneumonia: pneumonia after 48 hours of hospital admission without respiratory symptoms. (فجول ما يزل)

فجول ما يزل UTI و غير و غير
pneumonia فجول ما يزل Respiratory symptoms

→ ventilator associated pneumonia:

pneumonia after 48 hours of endotracheal intubation

→ health care associated pneumonia.

pneumonia happens in people not admitted to hospital, but in contact with health care provider. (دیر سے بیمار Bedridden سے دیر

پنومونیا، سوئیچ سے دیر Bed sore سے
(سین)

Clinical classification.

* typical pneumonia.

* Atypical pneumonia:

The organism cause is: Mycoplasma, Chlamydia, Legionella.

* Etiological classification:

- Bacterial pneumonia
- Viral pneumonia.
- Fungal pneumonia
- parasitic pneumonia
- chemical pneumonia.

Pathological classification:

- lobar pneumonia
- segmental pneumonia
- interstitial pneumonia
- Bronchopneumonia.

Diagnosis of pneumonia:

① history:

Cough, fever, dyspnea, sputum production and general (not specific symptoms) as chills, myalgia, arthralgia, headache, fatigue.

② examination findings

by inspection $\Rightarrow$ not different, $\rightarrow$

Respiratory distress $\Rightarrow$ تعبير كارتير و قد يكون

• tachypnea • type of respiratory maybe different

by palpation $\Rightarrow$ nothing

by percussion $\Rightarrow$ dullness on pneumonia site

by auscultation $\Rightarrow$ Bronchial breathing, coarse crackle, increase vocal resonance.

③ x-ray

consolidation with
air bronchogram دالة كارتير
 حافض كارتير

$\rightarrow$ تلف باف ذو الواس
replace by pus (infectious)

ASG Bronchiol

complication of pneumonia:

- ① mixed blood culture collapse
- ② recurrent & relapse
pneumonia $\Rightarrow$ Bronchoectasis
cause
- ③ type I respiratory failure
- ④ abscess $\rightarrow$ most common
organism cause is Staph,
Pseudomonas Klebsella.
- ⑤ sepsis, septicaemia, septic shock.

→ pneumonics بالخطوات
How to approach pneumonics & work up.

① CBC:

① WBC $\Rightarrow$ leukocytosis, leukopenia

② IgG $\rightarrow$ hemolysis in mycoplasma pneumoniae,

② platelets $\rightarrow$ thrombocytopenia or thrombocytosis

② chemistry .

① hypotonischer

② Kidney Function $\Rightarrow$ AKI from sepsis

③ Blood culture → Score ایخے، اھلو (لوگ) ایخے Score
ایکسٹو لہریں کا سرکس positive

④ Spurium culture

ଉପରୋକ୍ତ ମାର୍କ୍ସ

CVRB 65.

severe
cases

2. Blood culture,]

admission & signs CURBS 1, 2, 3
is other indication for admission

multilobar involvement chest x-ray 1, 2, 3

25,000 < severe leukocytosis ②

ischemic Heart D & other comorbidities ④
DM, HTN → 1, 2, 3

low albumin ⑤

outpatient → amoxicillin
microlight & erythromycin

Atypical. , typical 1, 2, 3
(1, 2, 3) 1, 2, 3

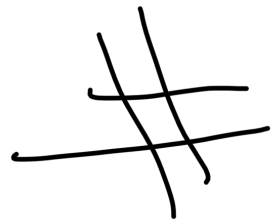
hospital admission: β -lactam (amoxicillin
with --- or cephalexin + macrolide)

Pseudomonas $\Rightarrow$ culture $\rightarrow$ antibiotic
ceftazepime + ciprofloxacin quinolone

is penicillin $\rightarrow$ no

fluroquinolone $\Rightarrow$ ---
respiratory

fluroquinolone -



* Pulmonary embolism:-

- How to approach the case of PE: - chest pain - dyspnea - hemoptesis
resyncope - hypoxia - tachycardia - palpitation - resp. distress...

hemodynamic instability [cardiac arrest - hypotension] → 1e.

maybe presented by presistance hypotension..

[drop in systolic BP > 40 mm Hg]

له یعنی صلاً حرف دانا ښوایه

150/100 if he presented to ER with BP:- 100/75

لہذا اصل کردہ اکثر منہ رنج سہو persistence hypotension

- ↳ indication for thrombolytic therapy...

indication for thrombolytic therapy...

*Clinically:- in chest xray we find:- ① may be normal

② may find hampton hump.

محلن تكون القامة على axilla واليلى باتجاه ال Sternum

③ may find fleishner sign.

← ال Pulmonary A. بجبهه embolism يكون مسرريون dilated proximal to the obstruction...

④ may find **westermark sign**

هتيازه حصل oligoemia جزو د فاع lung ريكه تم اخلاصه ار سطح سطح هذا الجزء regional pulmonary oligoemia

⑤ pleural effusion..

in ECG we find:- ① sinus tachy cardia...

② AF [arrhythmia] [اضطراب منظم]

③ Twave inversion from $V1 \rightarrow V4$ [R+ventricular strain signs]...

4

⑤ R+ bundle branch block

* wils score :-

- ① there is sign or symptom of DVT..
- ② unexplained dyspnea..
- ③ tachycardia..
- ④ immobilisation in last 4 weeks..
- ⑤ hemoptesis..
- ⑥ dangerous DVT or PE..
- ⑦ malignancy...

if the score:-

- 1 → low probability
- 2-6 → moderate probability
- >6 → high probability

or:- <4 low probability
>4 high probability

→ pt with low probability we do for him D.dime → if -ve not PE
→ if +ve we should

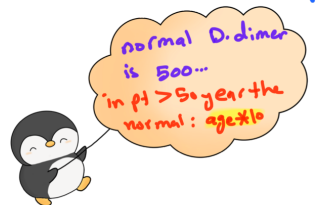
liver-renal failure or infection or malignancy or pregnancy or PE is not

→ pt with moderate probability we do for him D.dime → -ve not PE
→ +ve we should do angio CT...

→ pt with high probability we do for him angio CT + being first dose lowe molecule weight heparin...

if the CT -ve → we do scan and treat it as PE:- 3-4%
peripheral branches is not CT + is not false -ve is not of PE pt in angio CT
we give him anticoagulant

* 65 year pt presented to ER with moderate probability of PE + 620 d. dimer
the best next step is:- to see if the d. dimer normal or not
normal = 10 x age
* we don't do angio CT → lead to contrast induce renal failure
[normal D. dimer] PE is not renal failure



etc ... heart problem - stress - anemia

* in PE pt we should do Base line Echo in PE pt we find:- ① may be normal

② Tricuspid regurge [mild-moderate-severe → PE]

③ pulmonary HTN..

④ mild ventricular strain ^{يُعب} or failure → new sign for thrombolytic therapy..

called:- macomel sign...

[impaired Rt ventricle free wall motion]
due to ↑ BP [الضغط المرتفع في جدار جدار]

* The Ht of PE:-

low molecular weight heparin is preferred in PE pt.

↳ one mg / Kg once or twice daily...

* if there is renal failure the LMWH need dose adjustment...

* if the pt not want to take the drug twice daily we give him / her
1.5 mg / Kg once daily..

[v.k antagonist] warfarin also used in PE pt. *
warfarin is given after heparin 2.5-3.5 INR is target INR...
من وقتها هيعطيه هeparin 2.5-3.5 INR

* pt after 4 day of Ht become suddenly deteriorated

↳ dyspneic.
↳ tachypneic...
↳ B.P

due to:- propagation of thrombus or new PE or other dz as MI.. etc

so we do Echo to know the cause:- if there is Rt ventricle strain - pulmonary HTN

... thrombolytic therapy

* Contraindication for thrombolytic therapy:- ① hemorrhagic ———!!

② tumor in the brain

③ major surgery before 4 week.

④ there is active bleeding

→ we give this group venous catheter direct ———. or inject local thrombolytic therapy

* DVT → PE need filter to prevent the thrombus reach the lung...

* اكل لا خير هو الـ surgery ...

* the recommendation for this pt when he take H in home:-

- ① يفضل حاشي مع الـ Comedine مع لا قل من 3-6 month حسب نوع
سبب الـ PE ← لو ما انا سبب يعني راج بعض خصوصيات وندور وحقن بعض
الـ H لمدة الحياة ..
← لو ما سبب راج ياخذ الـ H 6 month ...
- ② لازم يفضل يعمل تحليل الـ INR كل اسبوع في اول شهر من ثم يفضل يحمله كل شهر...
- ③ يبعد عن المرقبات الخضراء
- ④ تجنب ياخذ اي دواء بدون موافقة الطبيب حيث لو انا مثلاً الـ NSAIDs راج تؤدي
Free warfarine in blood → maybe the INR become 7...
- ⑤ تجنب ياخذ اي IM injection حتى لو hematoma ...

* DOAC alternative drug to warfarine...

- no need INR adjustment...
- contraindicated in Breast feeding and pregnancy...

* if the pt has Comedine overdose we do:- ① if no bleeding or mildly bleeding
راج نوقف الـ Comedine لمدة حاشي بط الرصع ...

② if there is bleeding...

راج بعض المرقبات VK or Consntrate or Fresh frozen plasma or thrombin

* if the pt has DOAC overdose we give him DOAC antidote
[very expensive] atenuxate K

تلك اصلاً بعض المرقبات VK - risofine - etc... بتلا بتباركيدة