«COMMUNITY ACQUIRED PNEUMONIA» (C A P)

Definition : acute infection affecting the lung parenchyma originating from the community .

Although, Pneumonia can be caused by viruses and fungi in the community,

We mean by CAP --> bacterial causes

Bacteria are divided into:

★ Typical bacteria:

- Srept. pneumoniae (70% Of cases)
- Staphylococci (post- influenza)
- Klebsiella (in alcoholics)
- Hemophilus influenza & Moraxella Catarrhalis (in COPD Patients)

☑☑ These typical bacteria present by typical symptoms (Fever, productive cough, chest pain)

Streptococcus pneumonia اشهرهم على الاطلاق واهمهم

★ Atypical bacteria:

- Mycoplasma pneumoniae.
- Legionella pneumophila
- Chlamydia pneumoniae
- Chlamydia psittaci

☑☑ Those atypical bacteria present by atypical symptoms like flu like illness, fever, GIT symptoms with minimal chest symptoms (mild dry cough).

How to recognize CAP?

A. *Typical pneumonia* is easy to diagnose, because it comes similar to acute bronchitis but with specific difference

Typical symptoms: cough with mucopurulent sputum + high fever+ chest pain .

Severe cases: confusion.

Signs :

Tachypnea --> ↑ RR, tachycardia-->↑HR

Auscultation: unilateral or bilateral signs of consolidation >>

Inspiratory crepitations ± bronchial breathing ± Bronchophony & whispering

Severe cases : septic focus --> Shocked ↓ BP & ↑ HR + poor organ perfusion & ↓ capillary refill , confusion , multiorgan failure.

Bed side test: O2 sat < 95%

** ملاحظات هامة

♣*Strept.pneumonia* --> mostly lobar (unilateral), Accounts for 70% of all CAP

*It could be associated with herpes simplex (vesicles around the mouth & nose).

♣*Klebsiella pneumonia* --> upper lobes, common in alcoholics & DM, tend to cause cavities (abscess formation)

♣ *Staph.pneumonia* --> mostly multilobar (bronchopneumonia), Occur after influenza, in IV drug abusers, Tend to cause cavities (abscesses)

PVL MRSA (recently recognized MRSA strain) --> necrotizing severe pneumonia.

♣ *H.influenza*: most common cause of pneumonia in COPD patients (exacerbation)

Moraxella catarrhalis also cause pneumonia in COPD.

♣ *Pseudomonas aeroginosa* tends to cause CAP in patients with underlying bronchiectasis & Cystic fibrosis

B. Atypical pneumonia :

Present as atypical symptoms which are different from expected typical symptoms.

Atypical symptoms

Fever, myalagia, sore throat, abdominal pain, diarrhoea, cough often dry, may be not clear in history!! الاعراض تشبه نزلة البرد العادية

Extrapulmonary > pulmonary symptoms

**ملاحظات هامة

كل نوع من انواع البكتريا ال Atypical

ليها اعراض مميزه ليها ولكن نسبة حدوثها من ١٠- ٥٠٪

♣ *Mycoplasma*

Tends to occur in young adults, may come in epidemics in hostels

Cause bilateral interstitial infiltrates in CXR.

Complications (10 - 50%)

Autoimmune hemolytic anemia (cold type)

Skin: erythema multiforme CVS: pericarditis

CNS: Guillain Barré syndrome.

♣ *Legionella pneumophila*

Causes Legionnaire's disease

Air conditioning systems spreads its infection

Occurs in both young & old adults

- causes bilateral consolidation (often)

- causes multi system affection

- Confusion

- Electrolytes disturbances (↓ Na due to SIADH)

- Elevated liver enzymes

- Acute kidney injury (rare)

♣ *Chlamydia psittaci*

Causes “psittacosis”

Which is zoonotic disease transmitted via birds particularly parrots (elicit in history)

- Causes flu like illness.

- Bilateral mild infiltrates in CXR

- Rash (horders spots)

- Leucopenia

- Liver enzymes abnormalities may occur (rare)

بعد ما تاخد هستورى كويس وتشك فى الالتهاب الرئوى ، وتسمع صدر المريض وتلاقيه ماشى مع Pneumonia

ودى اهم حاجه على الاطلاق

لازم تقيم الحاله وتشوف هيا critical ولا لأ

وتشوف ال {Vital signs {BP, HR, respiratory rate (RR), temp

وبعدين تشوف% Conscious level... O2 saturation

تركب كانيولا وتحط المريض على اكسجين (ضرورى)

Keep O2 sat > 95 %

محلول ملح +

وبعدين

Confirm diagnosis by Urgent imaging by CXR or CT chest without contrast (better)

وتعمل صورة دم كامله CBC ووظائف كلى كامله (urea& creat) و ABG

وبعدين تحسب الSeverity of pneumonia

عن طريق Famous international simplified score

CURB-65 score

C: confusion ---> 1

U: Urea --> if > 20 mg/DL --> 1

R: Respiratory rate ≥30 --> 1

B: BP if SBP < 90 or DBP < 60 --> 1

65: (age) if ≥ 65 --> 1

- If score (0 - 1) ➡ Discharge + ttt at home

ياخد علاج فى البيت ومتابعة بالعياده الخارجية

- If score (2) ➡ Admit at ward + ttt

حجز بالقسم ويتحط على اكسجين مع العلاج

- If score ≥ 3 ➡ Admit at ICU

حجز بالعنايه المركزه + علاج

ويتحط على اكسجين ...احتماليه عاليه لحدوث

Respiratory failure ± septic shock

وبعدين نعمل التحاليل المطلوبة

⬇

Basic labs (CBC, CRP, LFT, RFT, Coagulation profile, RBG)

+ Sputum cluture

+ Blood culture

لو شاكك فى Atypical pneumonia

عشان فى اعراض معينه زى ما شرحنا قبل كده

ممكن نزود تحاليل معينه تانيه

If suspicious Mycoplasma >>Do serum Mycoplasma IGM (cold agglutinin)

If suspicious Legionella >> Do urinary antigen for Legionella

How to treat CAP?

Basis of ttt of CAP فكره العلاج

من المتفق عليه فى كل العالم ان احنا بنبدأ علاج Empirical for C A P

على اساس ان احنا عارفين كل البكتريا المتوقعه اللى بتعمل pneumonia سواء كانت typical او atypical

وبنسحب تحاليل قبل العلاج كنوع من التأكيد فقط

طبعا على رأس Typical organisms'

Strept .pneumonia

عشان كده لازم علاجنا يغطى

Both typical + atypical organisms

- ***Typical organisms*** (mainly strept) will be covered by Beta-lactam antibiotics

ودى تشمل

A) Penicillin (Amoxycillin ± clavulinic acid)

Example: (Augmentin 1 gm / 8hr)

B) cephalosporins (2nd, 3rd, 4th generations)

2nd --> cefuroxime ex: zinacef 1 -2 gm vial / 12 hrs

3rd --> Cefotaxime ex: cefotax or Claforan 2 gm / 8hr

-- >Ceftriaxone ex: ceftriaxone, triaxone, wintriaxone 2gm/24 hrs

4th --> Cefepime(cover pseudomonas) ex: maxipime 1 gm /12 hrs

Ceftazidime (cover pseudomonas) ex: Fortum 1 gm / 12 hrs.

- ***Atypical organisms*** will be covered by the following :

A) Macrolides

- Azithromycin Ex : Zithromax , Xithrone

Dose: 500 once first day, then 250 mg once for another 4 successive days (oral form)

IV: Zithromax 500 vial (once / day)

- Clarithromycin Ex : Klacid

Dose: 500 mg twice daily for 7- 10 days (oral only)

B) Doxycycline Ex: Vibramycin 100 mg cap 1× 2

Tabocine 100 1×2

C) new respiratory flouroquinolones

- Levofloxacin (oral & IV)

  Ex: Tavanic 500 - 750, Levoxin 500

- Moxifoxacin (400mg once cap)

  Ex: Moxiflox, moxavidex, moflox , meramerix)

- Gemifloxacin (320 mg cap 1×1)

  Ex: Quinabiotic .

بروتوكول العلاج

بعد ما عرفنا انواع المضادات الحيويه هنعرف ازاى نوظفها فى علاج ال CAP

وعشان نوظفها صح لازم نرجع الى C U R B 65 Score

**** هناك بروتوكولين فى العالم لعلاج ال CAP**

البروتوكول الامريكى بتاع

American thoracic society / Infectious disease society of America {ATS/ IDSA)

وده بيختلف شويه عن البروتوكول التانى

البروتوكول البريطانى بتاع

British thoracic society / NICE (BTS/NICE)

وفى الاخر الفكره واحده والمحصله واحده واللى هيا تغطي

Both typical & atypical organisms

انا هاعمل بروتوكول بيجمع بين الاتنين للتسهيل فقط كلاهما صحيح

1) If CURB 65 score: 0 – 1 [Mild pneumonia]

اوعى تخليه يروح وياخد علاج فى البيت الا بعد ما تتأكد انه Mild pneumonia

مش قادر تحدد ---> احجزه افضل

Discharge + ttt at home

+

Antibiotic regimen (oral ttt)

Augmentin 1 gm cap 1× 3 (for typical)

+

Zithromax cap (dose above)

Or

Vibramycin 100 mg tab (1×2)

لمده اسبوع

2) If CURB 65 score: 2 [moderate pneumonia]

دخول قسم الصدر او الباطنه

Fluids + O2 therapy

+

Antibiotic regimen

Cefotax or zimacef or ceftriaxone or maxipime IV (dose above)

--> For typical

+

Zithromax (vial) or oral (dose above)

Or

Tavanic (vial) or oral (dose above)

For 7 - 10 days

If improvement (clinical) after 5 days (changes to oral, consider discharge & ttt at home + follow up outpatient)

3) If CURB - 65 score --> ≥ 3 [severe pneumonia] = life threatening

Admit ICU

لازم حجز فى العنايه المركزه.

المريض معرض لل Septic shock

وال Type 1 respiratory failure

O2 therapy if refractory --> mechanical ventilation

Fluid therapy --> still shocked --> inotropic support (noradrenaline or dopamine)

+ Antibiotic regimen

IV Ceftriaxone, Maxipime, Fortum

(Beta lactam for typical)

+

IV (Tavanic or levoxin) better

Or

IV Zithromax

For 10 - 15 days

Follow up clinically (lung auscultation, Vital signs, O2 sat, ABG, need vent or not

If on vent --> improve or not --> Wean

If on inotropic support --> BP & hemodynamic --> improve or not.

ملحوظة أخيرة

علاج الكحه فى ال CAP

Cough sedatives

Neobronchopane Syp 2 × 3 or Allvent syp 2× 3

+

Mucolytic

Acetyl cysteine EFF 1× 3 or Bisolvon amp / 12 hrs

علاج الحراره

Panadol tab 2× 3

HOSPITAL ACQUIRED PNEUMONIA (HAP)

Definition: Pneumonia that occurs after > 48 - 72 hrs since patient's admission to the hospital.

لو الالتهاب الرئوى حصل بعد دخول المريض المستشفى ب يومين الى ٣ ايام ،، بيكون فى اشتباه كبير انها(HAP)

لكن عشان تجزم انها فعلا HAP تكون بدأت من اليوم الخامس بعد الحجز فى اى مكان فى المستشفى

والسبب فى كده ان البكتريا المسببه لل HAP

مختلفه عن البكتريا المسببه لل CAP اللي شرحناها قبل كده

✔ Bacteria causing HAP:

Gram negative bacteria ⬇⬇⬇

- Klebsiella
- Pseudomonas
- MRSA.

ومعرفتهم مهمه جداااا لان البكتريا دى عنيفه اكثر من CAP وبتعمل Septicemia أشد وأكتر منها

وبالتالي الMortality rate بيكون عالي

Presentation

هل اعراضها نفس اعراض ال CAP؟

الاعراض مش بتبقى واضحه زى الCAP ولكن بنشك فيها لو حصل Fever

وتدهور واضح فى حالة المريض اللى داخل بسببها المستشفى خصوصا لو معاها كحه ونهجان

Fever + deterioration of patient's condition ± cough ± dyspnea& tachypnea

Signs

اهم حاجه طبعا هى ال Signs

By auscultation you will find

⬇

Focal unilateral or bilateral signs of consolidation (creps, bronchial breathing, Bronchophony, etc)

How to confirm the diagnosis of HAP?

- CXR or CT chest
- Labs: CBC, CRP, sputum culture, basic labs(RFT, LFT, Electrolytes)
- ABG (important)

+

- Blood culture

±

- sputum culture

Assess the patient's condition بعد كده

لو ال vital signs فيها مشكلة زي

Tachypnea > 30

Shocked

Conscious level -> decreased

ICU admission

Management العلاج

- O2 therapy with target O2 sat ≥ 95%

If refractory ---> tube + mechanical ventilation

- Optimal fluid therapy with target CVP: 8 - 12.

بعد كده ⬇⬇⬇⬇⬇⬇

Empirical antibiotic therapy until blood culture results

هنغطى ال.

Gram negative

Pseudomonas

MRSA (if suspected)

** فى بروتوكولين

ATS/IDSA guidelines: الأول

✳ Piperacillin - tazobactam (Tazocin 4.5 gm / 8 - 12 hrs)

- Or Imipenem- Cilastin (Tienem 500 mg / 8- 12 hrs
- Or Meropenem (Meronem 500 mg / 8 -12 hrs)

+

For MRSA

- Vancomycin (Vancocin) vials for MRSA

20 - 40 mg/kg/day (1 - 2 gm /12 hrs)

- Or Linezolid (Averozolid 600 mg cap) 1× 2 .

Duration: 7 - 10 days

BTS/ NICE guidelines: الثاني

Anti- pseudomonal cephalosporins

- Ceftazidime (Fortum 1- 2 gm / 12 hrs Or
- Cefepime (Maxipime 1-2 gm/12 hrs)

+

Aminoglycosides

- Amikacin (Amikin 20 mg/kg/day)

  500 - 1000 mg /12 hrs)

+

Cover for MRSA as before

لو الHAP حصلت لمريض وهو على ال Vent بنقول عليها

Ventilator associated pneumonia (VAP)

والبكتريا المسببه ليها اسمها

Acinetobacter bumannii..

وعلاجها

Colistin (IV or inhaled)