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Clinical Grand Round

A 57 years-old man with pleural effusion, fever and costal swelling

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Medical history

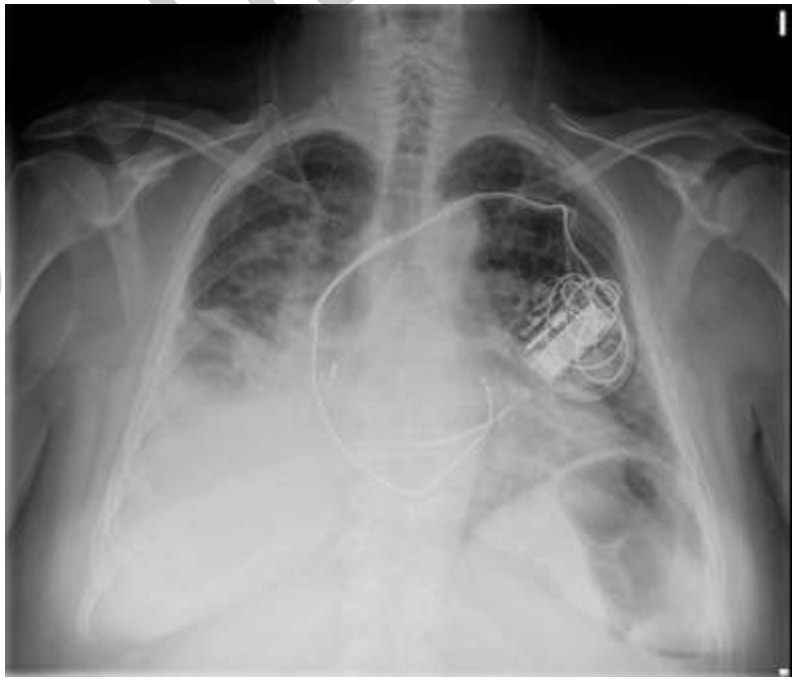
- 57 years old man
- No recent travel outside Spain
- Hypertension
- Type 2 diabetes mellitus
- Atrial fibrillation
- Obesity-hypoventilation syndrome.
- Ischaemic cardiomyopathy. Implantable cardioverter-defibrillator.

2 months before current admission…

Admitted to another hospital because of

- dyspnoea
- increasing orthopnoea
- fever

Additional investigations:
WBC 14,500/mm3 (7,000-11,000) with 85% Neutrophilia.
C reactive protein (CRP) 60 mg/L (N<5)



Chest CT Scan

Pleural effusion

No neoplastic disease or consolidation

- Thoracentesis: 1,000 cc of pleural fluid:
  - Cells: 525 leucocytes/mm^3 (N 0-250/mm^3)
    - 80% mononuclear (N 10%)
  - Glucose 134 mg/dl (N ≥2/3 blood glucose)
  - Protein 4,5 mg/dl (blood proteins 6,4 mg/dl)
  - LDH 340 U/L (blood LDH 410 mg/dl)
  - pH 7,49 (7,60–7,66)
  - Culture: negative.
  - Anatomical pathology: no malignant cells.

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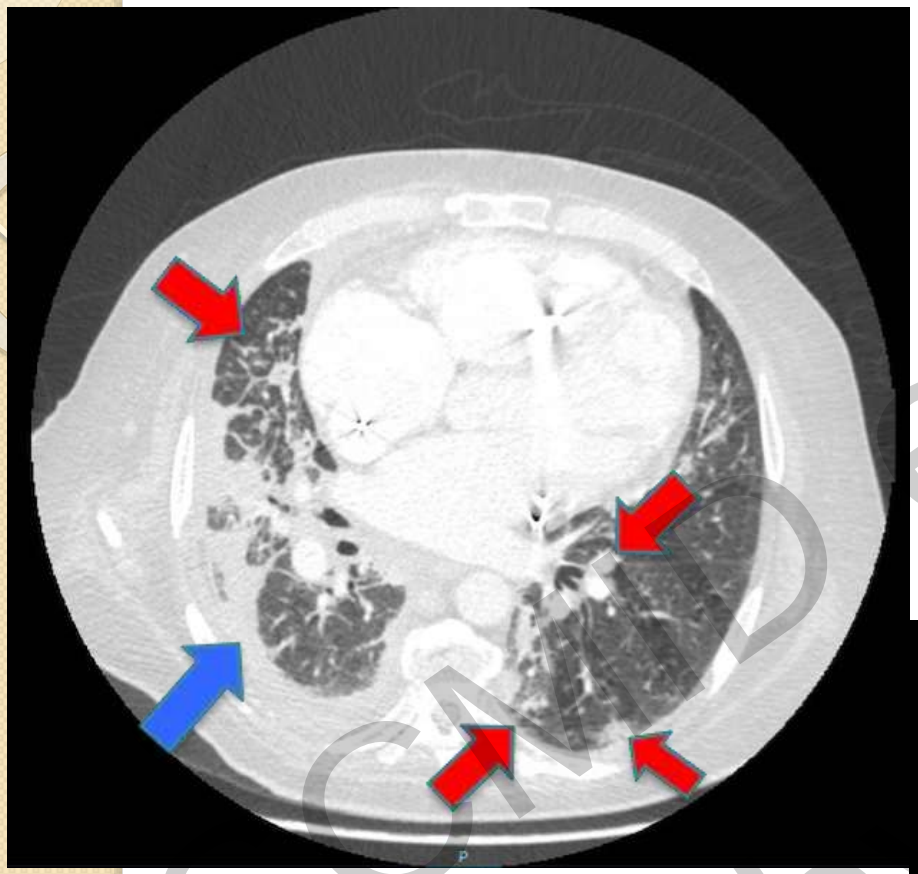
- The patient remained afebrile, patient was treated for heart failure

- Discharged at 15 days – Final diagnosis: "Chronic heart failure worsened by respiratory infection and secondary chronic right pleural effusion".

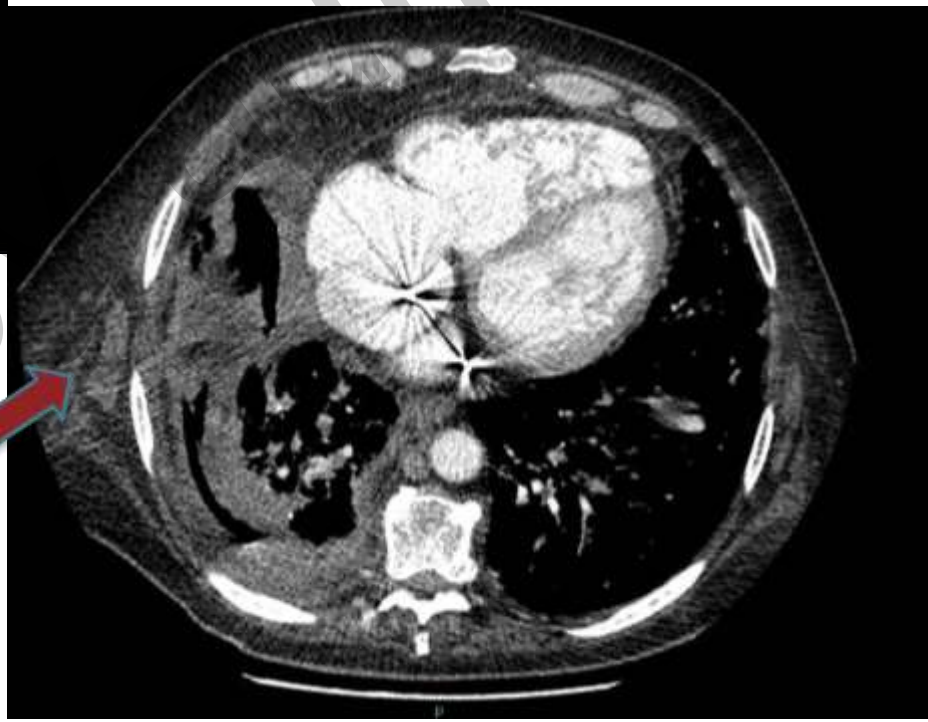
Current admission

- Right costal swelling (at the site of the thoracentesis)
- Increasing dyspnoea and peripheral oedema.
- Fever.
- Tests
  - Renal and liver function: normal
  - WBC 18,900 cells/mm^3 (N 7,000-11,000), with 92,8% neutrophils.
  - Erythrocyte sedimentation rate (ESR) 93 (N 0-20 mm/h)
  - CRP 203 mg/L (N<5)



Pulmonary nodules

Empyema



Collections

Panel differential diagnosis

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LIGHT CRITERIA

- Pleural fluid protein/blood protein > 0,5 : 0,7
- Pleural fluid LDH /blood LDH > 0,6 : 0,8
- Pleural fluid LDH >2/3 upper limit of normal blood LDH.

→ EXUDATE

Progressive worsening

Ceftriaxone 1 gr/24 h + Levofloxacin 500 mg/12h

3 days later, the patient was transferred to our hospital for pleural drainage by thoracic surgery

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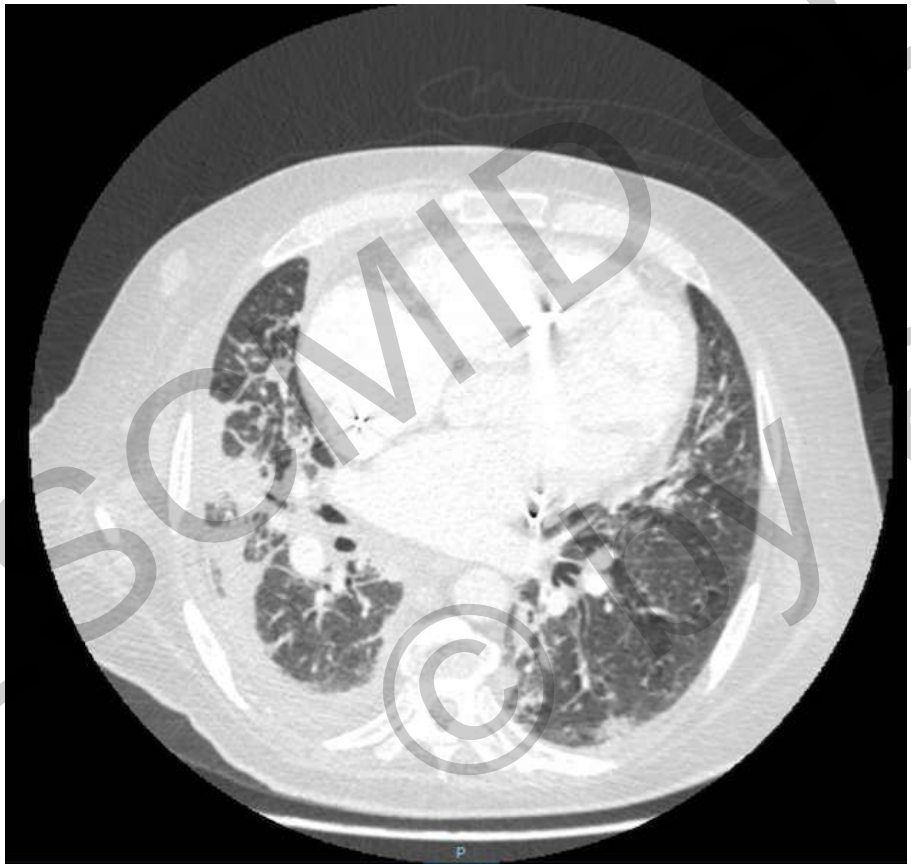
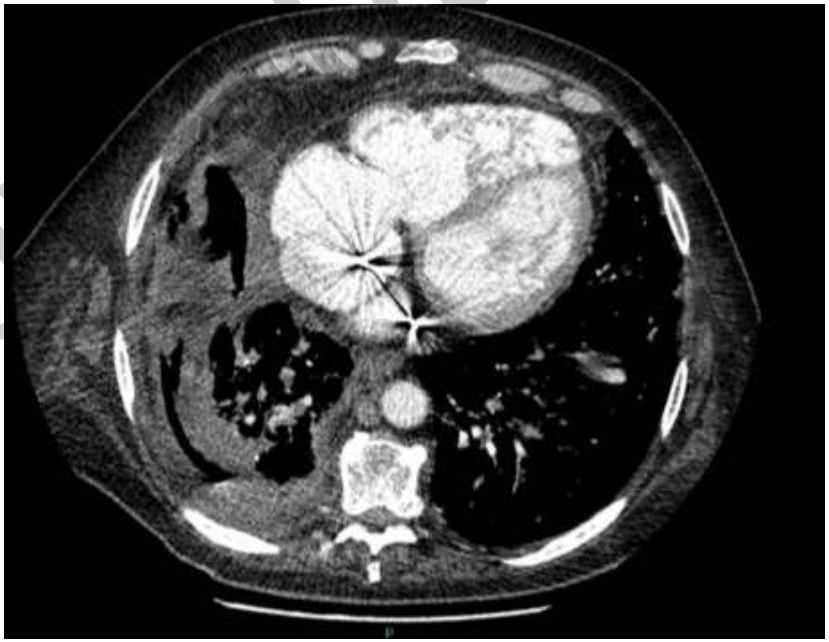
800 cc Pleural fluid:
- Purulent appearance
- Glucose undetectable
- Protein 5 gr/dl
- LDH 36,300 U/L

→ EMPYEMA

MULTIPLE PULMONARY NODULES, NO CAVITATION



THORACIC AND CUTANEUS SPREADING



Differential diagnosis

1. Tuberculosis
2. Actinomycosis
3. Nocardiosis
4. Invasive fungal disease
5. Rhodoccocus

- Piperacillin 4 gr/tazobactam 0,5 gr/8h
- Mantoux, PCR *M. tuberculosis*, Galactomannan
- Blood cultures

3 days later, in pleural fluid cultures *Nocardia otitidiscaviarum* was isolated

	S/I/R
Amoxicillin/ Clavulanate	R
Ceftriaxone	R
Imipenem	R
Tobramycin	S
Amikacin	S
Ciprofloxacin	R
Clarithromycin	R
TMP/SMX	S
Linezolid	S

Mantoux, PCR *M. tuberculosis*, Galactomannan, BC → NEGATIVES

Panel comment

- Treatment?
- Additional action?

- Pip/taz suspended.

- Treatment with TMP/SMX 800mg/160mg/8h was started

- Clinical worsening, with progressive respiratory insufficiency

Two days later

The patient developed left hemiparesis and a decreased level of consciousness.

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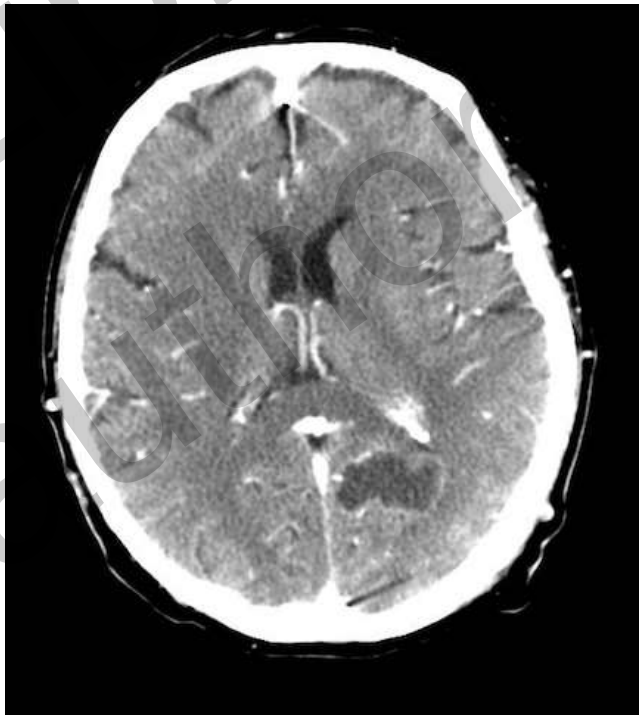

Cranial CT showed multiple brain abscesses.

- Combined treatment was started:
  TMP/SMX + Linezolid 600 mg/12h.

- Dexamethasone 8 mg iv/6h

The patient continued to worsen and died 7 days later because of respiratory insufficiency

Summary

Invasive nocardiosis due to *Nocardia otitidiscaviarum*, with multiple brain abscesses, pulmonary and soft tissue involvement in an apparently immunocompetent patient.

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Take home messages

- *Nocardia* spp usually cause invasive pulmonary infection, contiguous spreading within the thoracic cavity and hematogenous dissemination, particularly in the central nervous system.
- Most common in people with weakened immunity, but cases in the immunocompetent are reported
- In disseminated infection combination therapy may be required.
- Low level of suspicion causes diagnosis and treatment delay.

Thanks for your attention