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Evaluation of pulmonary nodules is recommended not only for cancer

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Abstract

Recommendations in guidelines suggest CT surveillance of solid nodules that measure from 8 to 30 mm in diameter, with different monitoring time depending on low, moderate or high probability of cancer. We observed a seventy-eight years old woman who underwent cholecystectomy for gallstones and had two solid nodules in chest-radiography. She was also studied with CT and then with FDG-PET, that was negative for malignancy. After 3 months CT described a new pulmonary nodule of 8 mm diameter in LIS. She was hospitalized in our division and studied with bronchoscopy for cytological and microbiological exams. We found positivity for Pneumocystis Jiroveci infection. A new evaluation of CT showed millimetric cystic peribronchiolar lesions associated to the known nodules. The patient was screened for HIV that was negative. The laboratory exams presented low level of IgM and normal IgG and IgA. We suspected selective IgM deficiency, an underestimated primary immunodeficiency. We treated our patient with intravenous sulfamethoxazole/trimethoprim and she was discharged with oral therapy and sent to haematologist. In conclusion the evaluation and follow up of pulmonary nodules is useful not only for cancer diagnosis but can occasionally show a different aetiology. In our case an opportunistic infection, that was unexpected in a negative-HIV patient, allowed a rare primary immunodeficiency

Case report

A 78 years old woman was admitted to our Division in December 2017. She had lung nodules in development. In 2013 she had had gastric ulcer; in 2010 arthroprosthesis surgery of the right hip. In April 2017 she made a chest-X-Ray, before a scheduled cholecystectomy for gallstones, that showed two solid nodules of the LIS and one of the LID of 8 mm. The FDG-PET (14/4/17) was negative for hyper-metabolic areas.

After three months, the programmed chest-TC showed a nodule of the LID (22x9mm) and of the LIS (14x10mm) and a new nodule of the LIS of 8 mm (right basal segment), with irregular border. During hospitalization she underwent bronchoscopy for microbiological and cytological exams; no malignant cells were found but the bronchoalveolar lavage (BAL) resulted positive for Pneumocystis Jiroveci infection. A new revision of chest-CT showed lung nodules and millimetric cystic peribronchiolar lesions. She was treated with intravenous sulfamethoxazole/trimethoprim (TMP-SMZ total daily dose: 15-20 mg/kg/day) , the dosage was reduced for nausea and than continued with oral

Discussion

Our patient was HIV-negative, laboratory and radiological exams excluded malignancy . CD4 cell count was normal. Laboratory exams presented only low level of IgM (< 25 mg/dl vn 40-230) with normal IgG and IgA. We suspected a Selective IgM deficiency, an underestimated primary immunodeficiency, and sent her to the haematologist for thorough examination.

The incidence of Pneumocystis Jiroveci Pneumopnia (PCP) in non-HIV positive patients has steadily increased due to the widespread use of immunosuppressive agents and corticosteroids. Despite the use of trimethoprim/sulfamethoxazole (TMP-SMZ) as first-line therapy, mortality rates in non-HIV positive patients diagnosed with PCP remain high. The CD4 cell count is less helpful in determining PCP risk in this population, although many patients do have low counts at the time of illness (1, 2). Mortality in the non-HIV-infected ,immunosuppressed population.

Conclusion

The evaluation and follow up of pulmonary nodules is useful for cancer diagnosis but can occasionally show a different aetiology. In our case an opportunistic infection, that was unexpected in a negative-HIV patient, allowed a rare primary immunodeficiency to be diagnosed. There are also strong difficulties, in rare diseases, to detect unusual CT- pattern lesions; peribronchiolar cystis are not found or valued instead as bronchiectasis. In our case the development of lung nodules suggested to perform diagnostic in depth and bronchoscopy was decisive for a correct diagnosis.

AcknowlegementtsBibliography

1) Festic E, et al. Acute respiratory failure due to Pneumocystis pneumonia in patients without human immunodeficiency virus infection: outcome and associated features. Chest 2005 128: 573–579

2) Enomoto T, et al. 2010. Differences in the clinical characteristics of Pneumocystis jirovecii pneumonia in immunocompromised patients with and without HIV infection. Respirology 15:126 –131.

3) BTS Guidelines for the Investigation and Management of Pulmonary Nodules. THORAX August 2015. Volume 70 Supplement

4) MorrisA, Norris KA.Colonization by Pneumocystis jirovecii and its role in disease. Clin Microbiol Rev. 2012. Apr;25(2):297-317

5)Sokulska M. et al. Pneumocystis jirovecii--from a commensal to pathogen: clinical and diagnostic review. Parasitol Res. 2015 Oct;114(10):3577-85.

Figure 1. BTS Guidelines for the Investigation and Management of Pulmonary Nodules. THORAX August 2015. Volume 70 Supplement (3)

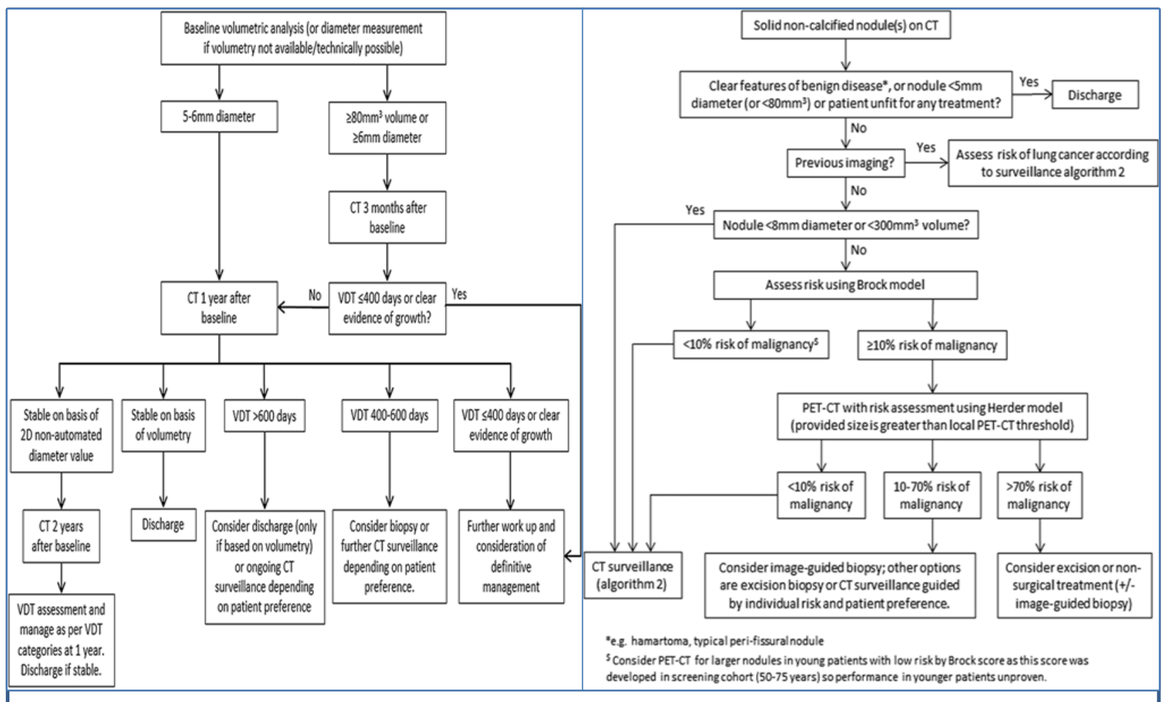

Figure 2. MorrisA, Norris KA. Colonization by Pneumocystis jirovecii and its role in disease. Clin Microbiol Rev. 2012. Apr;25(2):297-317 (4)

TABLE 2 Treatment regimens for PCP[a]

Disease severity	First choice	Alternatives	Notes	Adjunctive corticosteroids
Mild-moderate	TMP-SMX (15–20 mg/kg TMP and 75–100 mg/kg p.o. per day, divided q8h, or 2 DS tabs p.o. q8h)	Dapsone (100 mg p.o. q.d.)-trimethoprim (15–20 mg/kg/day p.o. divided q6h), clindamycin (300–350 mg p.o. q6h–8h)-primaquine (15–30 mg p.o. q.d.), atovaquone (750 mg p.o. b.i.d.)	Renal dosing for TMP-SMX: with creatinine clearance of 15–30 ml/min, full daily dose divided every 12 h for 24–48 h, then decrease daily dose by 50% and give every 24 h; with creatinine clearance of <15 ml/min, full daily dose every 48 h; on hemodialysis, full daily dose before dialysis and 50% dose after dialysis. Dapsone: check glucose-6-phosphate dehydrogenase levels prior to starting dapsone.	Not indicated
Moderate-severe[b]	TMP-SMX (15–20 mg/kg TMP and 75–100 mg/kg i.v. per day, divided q6 h or q8h)	Clindamycin-primaquine, pentamidine (3–4 mg/kg i.v. per day)	Renal dosing for pentamidine: with creatinine clearance of 10–50 ml/min, 3–4 mg/kg i.v. q24h–q36h; with creatinine clearance of <10 ml/min, 3–4 mg/kg i.v. q48h; on hemodialysis, 3–4 mg/kg i.v. q48h.	Prednisone (40 mg p.o. b.i.d. for 5 days, then 40 mg p.o. q.d. for 5 days, then 20 mg p.o. q.d. for 11 days), methylprednisolone i.v. at 75% of prednisone dose, start at time of antibiotic initiation or at least within 72 h

[a] Abbreviations: b.i.d., twice daily; i.v., intravenous; p.o., orally; q.d., every day; q8h, every 8 h; TMP-SMX, trimethoprim-sulfamethoxazole.
[b] Moderate to severe is defined as a pO_2 of <70 mm Hg or an alveolar-arterial oxygen gradient of >35 mm Hg while breathing room air.

Figure3. Sokulska M. et al. Pneumocystis jirovecii--from a commensal to pathogen: clinical and diagnostic review. Parasitol Res. 2015 Oct;114(10):3577-85. (5)

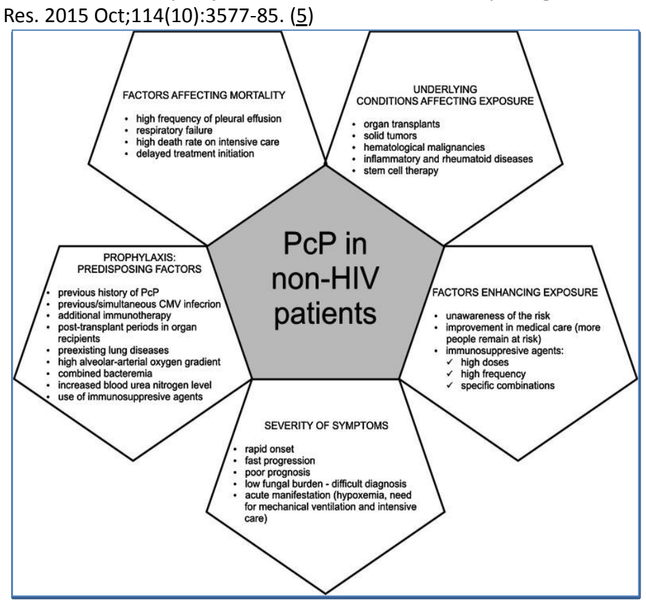

Figure4 . Chest-TC showed millimetric cystic peribronchiolar lesions associated to the known nodules