International Journal of Contemporary Pediatrics
Lopes V et al. Int J Contemp Pediatr. 2023 Dec;10(12):1854-1856
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20233609

Case Report

Pulmonary tuberculoma: does persistent imaging lesion equals treatment failure?

Vilma Lopes[1]*, Joana Pinho[1], Maria Adriana Rangel[1], Tânia Guimarães[2], Isabel Carvalho[1,3]

[1]Department of Pediatrics, Centro Hospitalar de Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Porto, Portugal
[2]Centro de Diagnóstico Pneumológico de Penafiel, Penafiel, Porto, Portugal
[3]Centro de Diagnóstico Pneumológico de Vila Nova de Gaia, Vila Nova de Gaia, Porto, Portugal

Received: 15 October 2023
Accepted: 10 November 2023

***Correspondence:**
Dr. Vilma Lopes,
E-mail: vilmanetolopes5@gmail.com

ABSTRACT

Pulmonary tuberculoma is a rare but challenging entity for paediatricians, regarding diagnosis and management. Treatment course is still up for discussion since tuberculomas may persist after treatment. The authors report two paediatric cases, both recently treated for latent tuberculosis infection, admitted for investigation of a solid pulmonary nodule. In both cases the thoracic CT scan showed a nodular subpleural lesion and the biopsy revealed epithelioid cells with areas of necrosis and calcification. The diagnosis of pulmonary tuberculosis was confirmed in one case by detection of acid-fast bacilli in the smear and in the other by nucleic acid amplification test for M. tuberculosis. The patients presented good response to treatment with antituberculosis drugs, without need for surgical resection. These reports highlight the diagnostic and treatment challenges of this rare entity.

Keywords: Pulmonary tuberculosis, Tuberculoma, Paediatrics

INTRODUCTION

Pulmonary tuberculoma comprises the development of well-circumscribed masses in the lung and represent a rare form of pulmonary tuberculosis in children.[1,2] It can be a manifestation of primary as well as postprimary disease.[3] Tuberculomas can remain stable for a long time; however, in cases of immunosuppression, the lesions may spread and disseminate or liquefy and form cavitary lesions.[2] Diagnosis confirmation can be challenging and frequently requires invasive processes.[2,4] Treatment is based on anti-bacillar drugs, but surgical resection may be needed. Treatment course is still controverse and up for discussion since tuberculomas may persist after treatment raising doubts of treatment efficacy.[1-3]

CASE REPORT

Case 1: a healthy 15-year-old male with close contact with a bacilliferous patient two years before, was not included in the contact-screening at the time. He presented with weight loss, anorexia and hyperhidrosis for one month. Physical examination was normal and chest radiography showed pleural effusion. After a course of antibiotics, the symptoms persisted and so etiological investigation followed. The chest computed tomography (CT) showed a mass in the right meddle lobe (Figure 1). The interferon-gamma release assay (IGRA) was positive. Sputum smear and nucleic acid amplification test (NAAT) for mycobacterium tuberculosis (Mt) were negative. A bronchoscopy was performed, which showed no alterations and negative smear, NAAT and bronchoalveolar lavage cultures. Treatment with Isoniazid

was started. After three months, chest radiography (Figure 2) and CT showed an increase in size. CT-guided biopsy revealed granulomas with epithelioid cells. NAAT was positive for Mt.

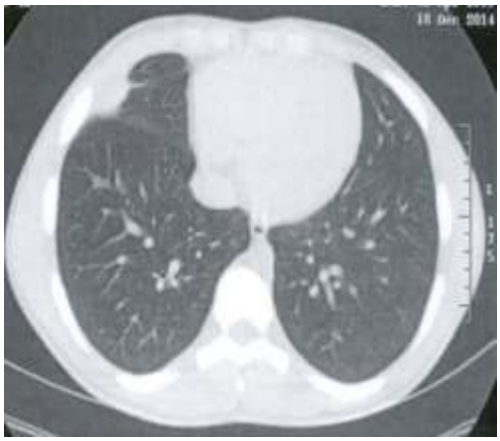

Figure 1: Chest CT with a mass in the right medium lobe (45x25 mm).

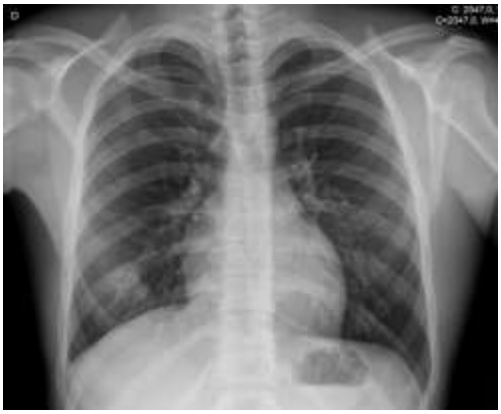

Figure 2: Chest radiography showing a hypo transparency in the right medium lobe.

No acid-fast bacilli were detected in the smear and cultural exams were negative. Treatment with isoniazid, rifampicin, pyrazinamide and ethambutol was established. Levofloxacin was added due to the risk of isoniazid resistance. The patient completed 12 months of treatment, with clinical and radiological improvement. Sequential radiological re-evaluations showed a slowly improvement of the tuberculoma with progressive decrease in size.

Case 2: healthy 5-year-old male, with BCG vaccination, whose mother had pulmonary tuberculosis. He presented asymptomatic and with normal chest radiography, negative TST and positive IGRA. Thus, treatment with Isoniazid was started. In the seventh month of treatment, he presented with productive cough. Chest radiography (Figure 3) showed opacity on the left and chest-CT (Figure 4) revealed atelectasis of the left lower lobe. Since bronchoscopy was normal and smear, culture and NAAT for Mt in bronchoalveolar lavage were negative, the decision was to continue treatment for tuberculosis infection. However, a new CT scan performed four months later (Figure 5) revealed a nodular image in the left lower lobe. Smear, culture and NAAT for Mt in gastric aspirate were negative. CT-guided biopsy showed a necrotizing polymorphic inflammatory process. Acid-fast bacilli microscopy was positive. The NAAT and culture exams were negative. Treatment with isoniazid, rifampicin, pyrazinamide and ethambutol was started. After six months, chest-TC showed a residual streak.

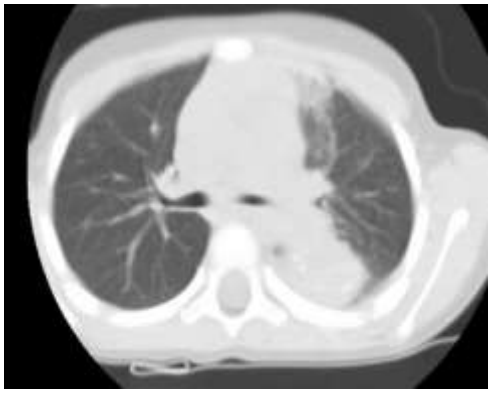

Figure 3: Chest radiography showing a left perihilar opacity.

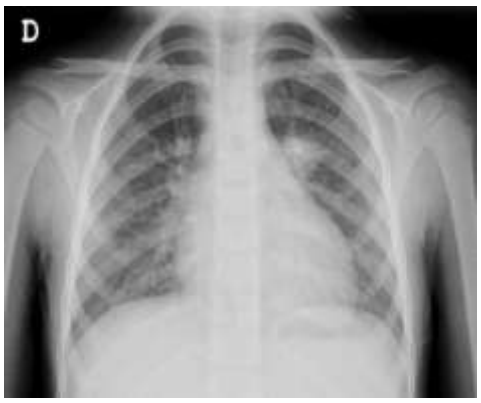

Figure 4: Chest CT showing atelectasis of the left lower lobe and mediastinal ganglia.

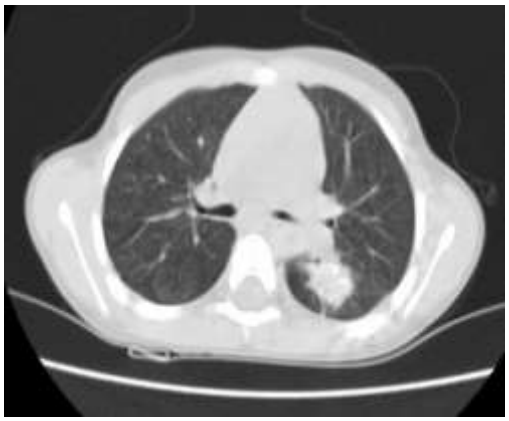

Figure 5: Chest CT showing a nodular lesion on the left lower lobe.

DISCUSSION

Tuberculomas are thought to result from a protective immune mechanism of repeated encapsulation of bronchopneumonic foci, making them rare in children given their immature immune system.[4] As seen in this cases, diagnostic confirmation is very difficult in the paediatric age, despite the use of several samples and techniques. Even with bronchoscopy, lavage samples are often not accurately collected from the lesion.[1,4] Concerning the imaging diagnosis, chest radiography can also fail to detect these lesions, requiring a chest-CT.[1,4] Diagnosis confirmation frequently requires invasive procedures such as percutaneous needle aspiration or thoracotomy.[1] In these cases, anti-bacillar treatment was sufficient for significant size reduction, but surgery may be necessary in some cases.[1] Treatment duration is not well stablished and is often a dilemma, given that tuberculomas may persist after treatment and continue to decrease for several months before complete resolution. Usually, if significant reduction is observed during treatment, this tendency continues without the need to prolong the regimen. Patients must remain under close clinical and imagological surveillance until complete resolution.[3]

CONCLUSION

We present two cases of pulmonary tuberculoma as a rare form of tuberculosis infection in children. As seen in these cases, diagnosis confirmation can be challenging and often require invasive procedures. In the reported cases there was a favorable evolution after medical treatment with antituberculosis drugs. The authors highlight that if there is a substantial reduction in size, usually regression continues even after the conclusion of treatment.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Mascarenhas MI, Pacheco S, Silvestre C, Felix F, Brito MJ, Correia P. Giant tuberculoma in an adolescent: atypical form of tuberculosis. BMJ Case Rep. 2012; 12:15-8.
2. Delgado-Pecellin I, Molinos-Quintana A, Obando-Santaella I. Giant pulmonary tuberculoma: atypical form of presentation of primary tuberculosis in childhood. Arch Bronconeumol. 2011;47(1):55-6.
3. Lee HS, Oh JY, Lee JH, Yoo CG, Lee CT, Kim YW, et al. Response of pulmonary tuberculomas to anti-tuberculous treatment. Eur Respir J. 2004;23(3):452-5.
4. Ushiki A, Yamazaki Y, Ideura G, Shinbo T, Sugawara M, Hama M, et al. Pediatric pulmonary tuberculoma with a solid pulmonary nodule detected on chest computed tomography. Intern Med. 2014;53(8):913-6.

Cite this article as: Lopes V, Pinho J, Rangel MA, Guimarães T, Carvalho I. Pulmonary tuberculoma: does persistent imaging lesion equals treatment failure? Int J Contemp Pediatr 2023;10:1854-6.