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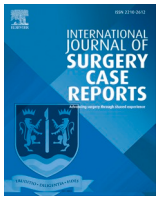

Case report

Hemorrhagic pleural effusion in Indonesian male with pulmonary tuberculosis: A rare case

Whendy Wijaksono *, Winariani Koesoemoprodjo

Department of Pulmonology and Respiratory Medicine, Faculty of Medicine, Universitas Airlangga – Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

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ABSTRACT

Background: Patients with hemorrhagic pleural effusion who live in tuberculosis endemic areas are recommended to perform adenosine deaminase (ADA) test.

Case presentation: A Javanese 22-year-old male complained of shortness of breath and cough with phlegm for 1 week, and worsened 3 days before being admitted to the hospital. The X-ray results showed pleural effusion, and hemorrhagic pleural effusion examination showed an increase in lymphocytes (60.2%), lactate dehydrogenase/LDH (2624 U/L), and cell count (4584 cells/mm^3), and the ADA test obtained 49 IU/L. The water-sealed drainage (WSD) was installed and first-line anti-tuberculosis drug (ATD) was given for 1 month. After showing improvement in the first month, the first-line ATD was continued until 6 months.

Discussion: Patients with hemorrhage pleural effusion who live in tuberculosis endemic areas are recommended to perform differential diagnosis of hemorrhage pleural effusion and pulmonary tuberculosis. The use of the first-line ATD in hemorrhagic pleural effusion and pulmonary tuberculosis needs to be evaluated in the first month to detect improvement, otherwise, the medication is stopped and other investigations are carried out.

Conclusion: Successful management of hemorrhagic pleural effusion and pulmonary tuberculosis depends on early diagnosis.

1. Introduction

Pleural effusion is a collection of fluid in the pleural cavity [1], while hemorrhagic pleural effusion is a condition when the pleural fluid mixes with blood [2]. Hemorrhage pleural effusion is often found in cases of malignancy, but very rare in tuberculosis cases [3]. Only about 3–5% of cases of hemorrhage pleural effusion in tuberculosis patient have been reported in the world [4]. In Indonesia, there is only one case report of tuberculosis pleural effusion in 2007 [5]. Meanwhile, hemorrhagic pleural effusion and pulmonary tuberculosis have not been reported simultaneously in Indonesia. Based on the description above, this research reported the case of a 22-year-old man who was diagnosed with hemorrhage pleural effusion and pulmonary tuberculosis. This case report referred to the Surgical Case Report (SCARE) 2020 guidelines [6].

2. Case presentation

A Javanese 22-year-old man, complained of shortness of breath and coughing up phlegm for 1 week, and worsened 3 days before being admitted to the hospital. The patient also experienced weight loss, decreased appetite, while night sweats were absent. The patient was a referral from another hospital with a history of taking 200 mL of pleural fluid with a hemorrhagic color in which the chest x-ray revealed pleural effusion (Fig. 1). The patient had a history of smoking for 4 years with a total of 6 cigarettes per day.

The patient came in composmetis, blood pressure of 110/80 mmHg, pulse of 84 ×/min, respiratory rate of 24 ×/min, axilla temperature of 36.7 °C, and 99% oxygen saturation with a simple mask of 6 L/min. Cardiac examination of ictus cordis was not palpable at the fifth intercostal space and the right heart border was difficult to evaluate. On lung examination, there was no intercostal retraction, widened collateral veins, widened intercostal spaces, and left asymmetrical right lung expansion. On palpation, there was decreased fremitus of touch in the right hemithorax. Dim percussion of the right hemithorax. On auscultation, vesicular breath sounds decreased in the right hemithorax.

Blood examination revealed an increase in lactate dehydrogenase/LDH (237 U/L) and C-reactive protein (35.95 mg/L), and HIV rapid of non-reactive. Meanwhile, the pleural fluid analysis showed an increase

* Corresponding author at: Department of Pulmonology and Respiratory Medicine, Faculty of Medicine, Universitas Airlangga – Dr. Soetomo General Academic Hospital, Jl. Mayjend Prof. Dr. Moestopo No. 6-8, Airlangga, Gubeng, Surabaya, East Java 60286, Indonesia.
E-mail address: whendy.wijaksono@gmail.com (W. Wijaksono).

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in lymphocyte (60.2%), LDH (2,624 U/L), and cell count (4584 cells/mm3). On chest CT scan with contrast, a right pneumothorax with subpleural bulla in the apical segment of the right superior lobe of the lung was found. In addition, no masses were found in both lobes. The patient was placed on water-sealed drainage (WSD) and evaluated (Fig. 2).

The results of the adenosine deaminase (ADA) test in pleural fluid showed a value of 49 IU/L, with pleural fluid cytology results were mesothelial cells, no malignant cells. Immunohistochemistry (IHC) results showed focal positive cytokeratin in affected cells, non-specific Calretinin according to reactive mesothelium. Abdominal ultrasound results were normal. The patient was given first-line anti-tuberculosis drugs (ATD) that included Rifampicin 600 mg, Isoniazid 300 mg, Pyrazinamide 1500 mg, and Ethambutol 1000 mg during 1 month. The patient had no complaints during medical control. The administration of first-line ATD of 3 tablets Fixed-Dose Combination (FDC) was continued until the second month (intensive phase of tuberculosis treatment). The patient then continued with first-line ATD during 4 months (continuous phase). A chest X-ray after first-line ATD therapy showed lung improvement.

3. Discussion

The suspicion of tuberculosis in patients with pleural effusion in tuberculosis endemic areas should be considered [7]. The diagnosis of tuberculous pleural effusion in this study was confirmed by the result of ADA test >40 IU/L, an increase in lymphocytes, and no malignancy [4,8]. In tuberculous pleural effusion, lymphocytes are usually above 50% and mesothelial cells are occasionally found (28.9% of cases) with a cell count of approximately 3% [9]. In hemorrhagic pleural effusions, low pleural fluid confirmed by the ADA test can rule out tuberculosis [10].

Management of pleural effusion is the placement of WSD that can increase lung expansion maximally [11], and it is the most common surgical procedure performed in thoracic surgery [12,13]. Early drainage of pleural fluid has been approved as a treatment for tuberculous pleural effusions. The procedure is followed with a Directly Observed Treatment Short-course (DOTS) following WHO guidelines. The ATD patients without bacteriological or histological confirmation should be evaluated 1 month after treatment. If there is no improvement, the patients should be re-examined and another diagnosis considered [14,15]. A previous study reported that 70 patients with tuberculous pleurisy who underwent thoracoscopy and insertion of an intercostal drain showed improvement in symptoms, no reaccumulation of pleural fluid after previous drainage [16]. Another previous study also stated that administration of ATD and 12-month follow-up showed clinical improvement and no recurrence. These results indicate that early pleural fluid drainage is more effective and faster in achieving resolution of pleural fluid accumulation in tuberculous pleurisy [17].

4. Conclusion

A Javanese 22-year-old male patient has been reported with hemorrhagic pleural effusion and pulmonary tuberculosis. Hemorrhagic pleural effusion is generally caused by malignancy, but diagnosis of pulmonary tuberculosis can be considered in tuberculosis endemic areas. Management of hemorrhagic pleural effusion and pulmonary tuberculosis includes early placement of WSD and administration of first-line ATD for up to 1 month. When showing improvement, the first-line ATD is continued for 2 months (intensive phase) and continuous phase for 4 months.

Guarantor

Winariani Koesoemoprodjo.

Provenance and peer review

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None.

Ethical approval

Not applicable.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the

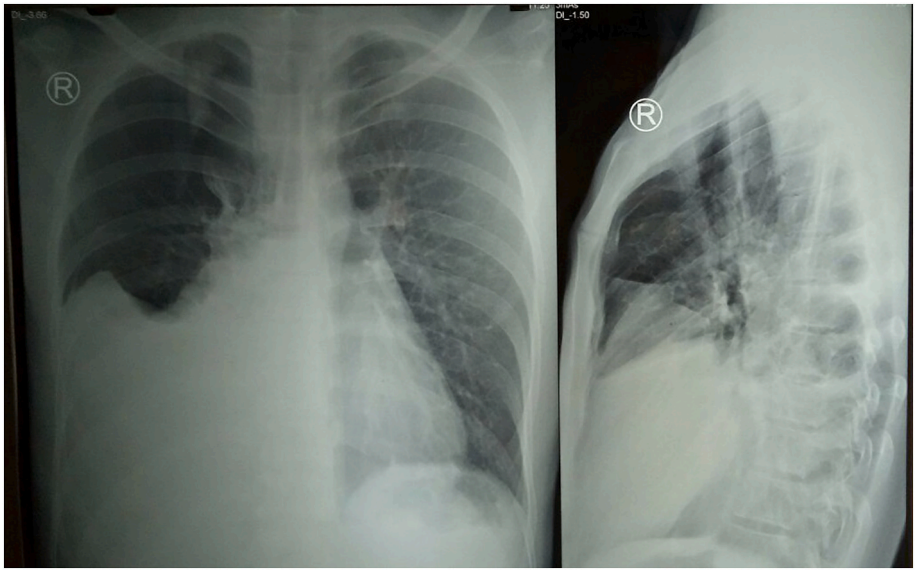

Fig. 1. Chest X-ray of anterior-posterior and lateral dextra post evaluation of pleural fluid of 200 cc of the right lung. It appears that there is a shroud at the bottom of the right lung with reduced pleural effusion accompanied by an air-fluid level picture of the right fluid-pneumothorax.

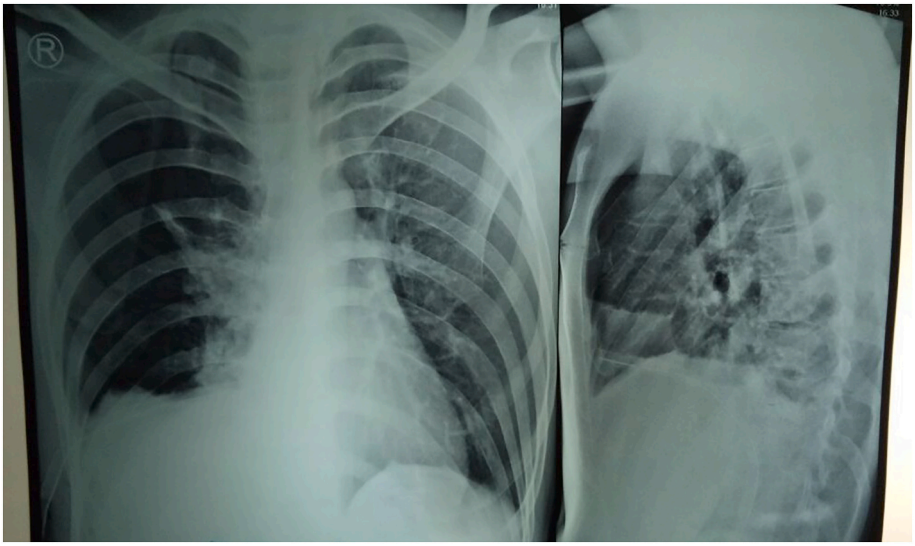

Fig. 2. Chest X-ray of anterior-posterior, showing a reduced homogeneous right lung covering with a chest drainage tube picture.

written consent is available for review by the Editor-in-Chief of this journal on request.

Research registration

N/A.

Credit authorship contribution statement

All authors contributed toward data analysis, drafting, and revising the paper, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Declaration of competing interest

Whendy Wijaksono and Winariani Koesomoprodjo declare that they have no conflict of interest.

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References

[1] N. Mandovra, P. Vaidya, P. Chhajed, Current approaches to tuberculous pleural effusion, Astrocyte 4 (2) (2017) 87–93, https://doi.org/10.4103/astrocyte.astrocyte_59_17.
[2] N. Dogra, A. Luthra, R. Chauhan, R. Bajaj, K.P. Gourav, Recurrent unilateral hemorrhagic pleural effusion: a rare manifestation of thoracic endometriosis syndrome, Ann. Card. Anaesth. 23 (4) (2020) 521–523, https://doi.org/10.4103/aca.ACA_17_19.
[3] C. Mermigkis, A. Kopanakis, K. Psathakis, N. Karagiannidis, M. Kastanakis, M. Patentalakis, et al., A massive hemorrhagic pleural effusion does not exclude the diagnosis of tuberculosis: a case report, Cases J. 2 (2009) 8707, https://doi.org/10.4076/1757-1626-2-8707.
[4] J.A. Shaw, E.M. Irusen, A.H. Diacon, C.F. Koegelenberg, Pleural tuberculosis: a concise clinical review, Clin. Respir. J. 12 (5) (2018) 1779–1786, https://doi.org/10.1111/crj.12900.
[5] E.J. Nelwan, A. Kooshartoro, R. Hukom, R.H. Nelwan, Responsive treatment of pleural effusion due to probable tuberculosis infection, Acta Med. Indones. 39 (3) (2007) 130–132.
[6] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, The SCARE 2020 guideline: updating Consensus Surgical CAse REport (SCARE) guidelines, Int. J. Surg. (Lond. Engl.) 84 (2020) 226–230, https://doi.org/10.1016/j.ijsu.2020.10.034.
[7] M.J. Vorster, B.W. Allwood, A.H. Diacon, C.F. Koegelenberg, Tuberculous pleural effusions: advances and controversies, J. Thorac. Dis. 7 (6) (2015) 981–991, https://doi.org/10.3978/j.issn.2072-1439.2015.02.18.
[8] K. Zhai, Y. Lu, H.Z. Shi, Tuberculous pleural effusion, J. Thorac. Dis. 8 (7) (2016) E486–E494, https://doi.org/10.21037/jtd.2016.05.87.
[9] B.K. Gupta, V. Bharat, D. Bandyopadhyay, Role of adenosine deaminase estimation in differentiation of tuberculous and non-tuberculous exudative pleural effusions, J. Clin. Med. Res. 2 (2) (2010) 79–84, https://doi.org/10.4021/jocmr2010.03.280w.
[10] Y. Nakajima, K. Kuribayashi, H. Ishigaki, A. Tada, Y. Negi, T. Minami, et al., Adenosine deaminase in pleural effusion and its relationship with clinical parameters in patients with malignant pleural mesothelioma, Cancer Investig. 38 (6) (2020) 356–364, https://doi.org/10.1080/07357907.2020.1776313.
[11] A.N. Charisma, A. Bakhtiar, Wedge resection on recurrent pneumothorax, failed lung expansion after needle aspiration: a case report, Int. J. Surg. Case Rep. 83 (2021), 106000, https://doi.org/10.1016/j.ijscr.2021.106000.
[12] N. Hapsari, R. Yudhawati, Bilateral primary spontaneous pneumothorax with multiple bleb performed by VATS and wedge resection: a rare case in indonesian adult and review article, Int. J. Surg. Case Rep. 85 (2021), 106222, https://doi.org/10.1016/j.ijscr.2021.106222.
[13] P.M. Juwita, R. Yudhawati, Secondary pleuropulmonary amoebiasis due to liver abscess rupture: a complication case report in low resource setting, Int. J. Surg. Case Rep. 85 (2021), 106231, https://doi.org/10.1016/j.ijscr.2021.106231.
[14] Y.T. Wang, C.B. Chee, L.Y. Hsu, R. Jagadesan, G.J. Kaw, P.M. Kong, et al., Ministry of Health Clinical Practice guidelines: prevention, diagnosis and management of tuberculosis 57 (3) (2016) 118–124, https://doi.org/10.11622/smedj.2016051, quiz 25.
[15] F. Herawati, E.Y. Fahmi, N.A. Pratiwi, D. Ramdani, A.K. Jaelani, R. Yulia, et al., Oral anti-tuberculosis drugs: an urgent medication reconciliation at hospitals in Indonesia, J. Public Health Res. 10 (3) (2021), https://doi.org/10.4081/jphr.2021.1896.
[16] L. Ampollini, A. Bobbio, L. Ventura, C. Schianchi, P. Carbognani, M. Rusca, Long-lasting tuberculous pleurisy, Eur. Respir. J. 49 (5) (2017), https://doi.org/10.1183/13993003.02472-2016.
[17] C.L. Chung, C.H. Chen, C.Y. Yeh, J.R. Sheu, S.C. Chang, Early effective drainage in the treatment of loculated tuberculous pleurisy, Eur. Respir. J. 31 (6) (2008) 1261–1267, https://doi.org/10.1183/09031936.00122207.