Pleural Effusion With Trapped Lung Associated With Methimazole Induced Hypothyroidism

Nathan Brewster DO
Lehigh Valley Health Network, Nathan.Brewster@lvhn.org

Michal Kloska MD
Lehigh Valley Health Network, Michal.Kloska@lvhn.org

Alaynna C. Kears DO
Lehigh Valley Health Network, Alaynna.Kears2@lvhn.org

Brian J. Holahan DO
Lehigh Valley Health Network, Brian.Holahan@lvhn.org

Waqas Adeel MD
Lehigh Valley Health Network, Waqas.Adeel@lvhn.org

Published In/Presented At

Brewster, N. Kloska, M. Kears, A. Holahan, B. Adeel, W. (2019, October). *Pleural Effusion With Trapped Lung Associated With Methimazole Induced Hypothyroidism*. Poster Presented at: CHEST Annual Meeting, New Orleans, LA.

Pleural Effusion With Trapped Lung Associated With Methimazole Induced Hypothyroidism

Nathan Brewster, DO, Michal Kloska, MD, Alaynna Kears, DO, Brian Holahan, DO, Waqas Adeel, MD

Department of Internal Medicine, Lehigh Valley Health Network, Allentown, Pa.

Introduction

Anti-thyroid medications can cause a variety of adverse reactions. There are only a small amount of reported cases associating the thioamides with pleural effusions.[1,2,3] None of these were associated with trapped lung. We present a case of a trapped lung with unclear etiology associated with methimazole and hypothyroidism.

Case presentation

A 36-year-old male with a history of type 1 diabetes and Grave's disease status post radio-iodine ablation on methimazole presented to the hospital after one month of shortness of breath and cough with no associated fevers, chills, or night sweats. The patient was found to have a large right pleural effusion with mediastinal shift to the left with a completely collapsed lung. He subsequently had a chest tube placed with four liters fluid drained. Pleural fluid showed an exudative effusion by Light's Criteria with fluid and serum protein of 4.6 g/dL and 8.6 g/dL respectively. Fluid and protein lactate dehydrogenase (LDH) were 120 U/L and 320 U/L respectively. Pleural glucose was 95 mg/dL and pH was 7.75. Gram stain and cultures were unremarkable. Cytology was non-diagnostic for malignancy. After drainage, the patient's right lung remained collapsed with quickly reaccumulated effusion. Serum sedimentation rate, quantiferon gold, fluid adenosine deaminase, and fluid amylase were all negative. He was found to be hypothyroid with a thyroid stimulating hormone level of 20.7 IU/mL and free T4 of 0.31 ng/mL and his methimazole was stopped. An autoimmune panel was negative.

Due to concern for trapped lung, the patient underwent a video-assisted thorascopic surgery converted to thoracotomy for decortication of the right upper, middle, and lower lobes. After decortication, the patient had increased aeration of the lung with no evidence of consolidation or mass. He was ultimately discharged home with resolution of the hypothyroidism and placed back on methimazole. He has only had recurrence of a mild asymptomatic effusion.

Images

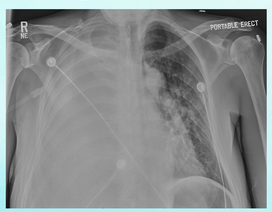

Image 1. Chest x-ray demonstrating complete opacification of the right hemithorax with tracheal deviation to the left.

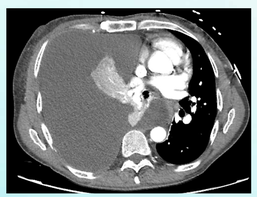

Image 2. CT chest demonstrating a large right pleural effusion with a collapsed right lung.

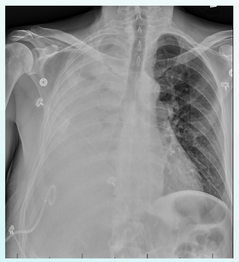

Image 3. Chest x-ray with persistent opacification on the right after chest tube placement.

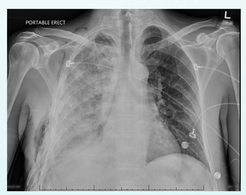

Image 4. Chest x-ray showing improved aeration after decortication of the right lung.

Discussion

- The exact etiology of the effusion with trapped lung remains unclear in this case. Hypothyroidism may have been a contributing factor for which methimazole may also have been involved.
- Methimazole has been associated with lupus-like reactions for which pleuritis and effusion could be a possibility.
- There is no clear evidence that the effusion was from infection. Malignancy is another consideration although fluid analysis was non-diagnostic and no tumor was identified on repeat imaging.
- With this patient's recurrent small pleural effusion, it may be beneficial for him to have close monitoring of thyroid levels and dosing of the methimazole, especially in the setting of having already experienced a trapped lung.

Conclusion

Methimazole and hypothyroidism may be a cause of pleural effusion and even trapped lung. When evaluating a patient's effusion, methimazole and possibly the other thioamides must be considered as possible culprits.

REFERENCES

[1]Lee JH, Park M, Park MJ, Jo YS. Massive pleural and pericardial effusion due to hypothyroidism in a patient with a surgically treated thyroid-stimulating hormone-producing pituitary adenoma. *Acta Clin Belg.* 2018;73(5):398-401

[2]Da Costa P, Silva F, Henriques J, et al. Methimazole associated eosinophilic pleural effusion: a case report. *BMC Pharmacol Toxicol.* 2017 Mar;18(1):16

[3]Sen N, Ermis H, Karatasli M, Habesoglu M, Eyuboglu F. Propylthiouracil-associated eosinophilic pleural effusion: a case report. *Respiration.* 2007;74(6):703-5

LVHN.org

Lehigh Valley Health Network