



## Case Report

# Pleurisy and bilateral pleural effusions after administration of atorvastatin

Amsalu Bekele Binegdie<sup>1</sup>, Charles B. Sherman<sup>2</sup>, Neil W. Schluger<sup>3</sup>

<sup>1</sup>Department of Internal Medicine, College of Health Sciences, Addis Ababa University, Bole Road, Addis Ababa, Ethiopia, <sup>2</sup>Department of Internal Care Medicine, Warren Alpert Medical School of Brown University, Providence, Rhode Island, <sup>3</sup>Department of Medicine, Division of Pulmonary and Critical of Internal Medicine, New York Medical College, Valhalla, New York, United States.

### \*Corresponding author:

Amsalu Bekele Binegdie,  
Department of Internal  
Medicine, College of Health  
Sciences, Addis Ababa  
University, Bole, Addis Ababa,  
Ethiopia.

[amsalubekete2016@gmail.com](mailto:amsalubekete2016@gmail.com)

Received : 23 August 2020

Accepted : 25 August 2020

Published : 27 September 2020

### DOI

10.25259/JPATS\_12\_2020

### Quick Response Code:



## ABSTRACT

Atorvastatin is a widely used cholesterol-lowering agent. Although generally safe and well tolerated, a number of drug side effects have been reported. We report only the second case of atorvastatin-induced pleural effusions, presenting as pleurisy, and the first case from Ethiopia. We believe our patient had this association based on the temporal onset of symptoms, the otherwise negative evaluation, and the resolution of findings once atorvastatin was discontinued. Clinicians need to consider this relationship when evaluating unexplained pleurisy and pleural effusions in patients taking atorvastatin.

**Keywords:** Atorvastatin, Pleural effusions, Pleurisy

## INTRODUCTION

Atorvastatin is a commonly prescribed statin used to lower cholesterol. It works by inhibiting HMG-CoA reductase and increasing the expression of low-density lipoprotein (LDL) receptors in the liver. This, in turn, leads to a reduction in LDL serum levels and a significant decrease in cardiovascular mortality.<sup>[1-3]</sup> The most common side effects of atorvastatin include muscle pain, myopathy, rhabdomyolysis, and elevations of hepatic enzyme.<sup>[4-6]</sup> We report only the second case of atorvastatin-induced pleural effusions, presenting as pleurisy, and the first case from Ethiopia. Informed written consent was taken from the patient to use the clinical data for this case presentation.

## CASE REPORT

A 68-year-old healthy male visited his primary care physician for a routine office visit. He had no history of hypertension, diabetes, or tobacco use. His physical examination and baseline laboratories including renal and liver function were all normal. His lipid profile showed the following: Serum cholesterol: 167 mg/dl (<200 mg/dl), HDL: 43 mg/dl (>60 mg/dl), and LDL: 118 mg/dl (<130 mg/dl). Despite these results, he was started on atorvastatin 40 mg once daily.

Two weeks after initiation of treatment, he developed left-sided and then subsequent right-sided pleuritic chest pain. He had no fever, chills, pharyngitis, rhinorrhea, cough, or dyspnea. He returned to his primary care physician who obtained a normal CBC; a CXR at the time showed a moderate sized left-sided pleural effusion [Figure 1].

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2020 Published by Scientific Scholar on behalf of Journal of the Pan African Thoracic Society

The patient was then referred to a pulmonologist for further evaluation. A chest CT was obtained and revealed bilateral pleural effusions, left greater than right, with no other abnormalities.

Other laboratory investigations included a normal echocardiogram and negative ANA and RF. Left-sided thoracentesis was performed and the pleural fluid was found to be a lymphocytic transudate with negative cytology, Gram stain, and GeneXpert testing.

Despite the above investigations, the exact cause of the pleural effusions was not identified. The possibility of atorvastatin-induced pleurisy/pleural effusions was considered and the drug was discontinued. His bilateral pleuritic chest pain subsided after 1 week and a repeat CXR 1 month later showed significantly reductions in the bilateral pleural effusions. After 3 months, repeat CXR and chest ultrasound were both normal [Figure 2].



Figure 1: CXR imaging showed a moderate left-sided pleural effusion.



Figure 2: CXR after 3 months of discontinuation of atorvastatin.

## DISCUSSION

We report only the second case of atorvastatin-induced pleural effusions, presenting as pleurisy,<sup>[7]</sup> and the first case from Ethiopia. We believe our patient had this association based on the temporal onset of symptoms, the otherwise negative evaluation, and the resolution of findings once atorvastatin was discontinued.

In general, drug-induced pleural reactions may occur in the absence of parenchymal lung disease and usually manifest as pleurisy and pleural effusions. The pathologic mechanism remains unknown, but hypersensitivity, oxidative stress of the mesothelial cells, fluid retention, and chemical inflammation have all been postulated.<sup>[8,9]</sup> To make the diagnosis, clinicians should meticulously review medication use and inquire about a temporal relationship between drug exposure and symptoms. Resolution of symptoms after drug discontinuation, reappearance after drug reuse, and evidence of pleural fluid eosinophilia help to confirm the diagnosis.<sup>[6]</sup> Treatment is two-fold: Drainage of the pleural fluid to relieve dyspnea and discontinuation of the offending drug. Rarely, corticosteroid administration is required.

## CONCLUSION

Clinicians need to consider the relationship between atorvastatin and pleural effusions, presenting as pleurisy, when evaluating patients with unexplained pleural disease.

## ACKNOWLEDGMENTS

The authors would like to thank the East African Training Initiative ([eatiethiopia.org](http://eatiethiopia.org)), Addis Ababa University, Addis Ababa, Ethiopia, Vital Strategies, New York City, New York, USA, and the Swiss Lung Foundation, Zurich, Switzerland, for their support.

We thank the NIHR Global Health Research Unit on Lung Health and TB in Africa at LSTM – “IMPALA” for helping to make this work possible. In relation to IMPALA (grant number 16/136/35) specifically: IMPALA was commissioned by the National Institute of Health Research using Official Development Assistance funding. The views expressed in this publication are those of the author(s) and not necessarily those of the NHS, the National Institute for Health Research or the Department of Health.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

## Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### REFERENCES

1. Alzu'bi AA. Simvastatin-induced pleuro-pericardial effusion and megaloblastic anemia. *J Gen Pract* 2015;3:198.
2. Hebert PR, Gaziano JM, Chan KS, Hennekens CH. Cholesterol lowering with statin drugs, risk of stroke, and total mortality. An overview of randomized trials. *JAMA* 1997;278:313-21.
3. Alberts AW. Discovery, biochemistry and biology of lovastatin. *Am J Cardiol* 1988;62:J10-5.
4. Liebhaber MI, Wright RS, Gelberg HJ, Dyer Z, Kupperman JL. Polymyalgia, hypersensitivity pneumonitis and other reactions in patients receiving HMG-CoA reductase inhibitors: A report of ten cases. *Chest* 1999;115:886-9.
5. Lantuejoul S, Brambilla E, Brambilla C, Devouassoux G. Statin-induced fibrotic nonspecific interstitial pneumonia. *Eur Respir J* 2002;19:577-80.
6. Kalomenidis I, Papiris S, Loukides S. Bilateral pleural effusions associated with pravastatin sodium treatment. *Eur Respir J* 2007;30:1022.
7. Mansour Y, Masson P, Gourcier AL, Gagnadoux F, Trzepizur W. Pleurisy induced by atorvastatin. *Rev Mal Respir* 2016;33:607-11.
8. Huggins JT, Sahn SA. Drug-induced pleural disease. *Clin Chest Med* 2004;25:141-53.
9. Antony VB. Drug-induced pleural disease. *Clin Chest Med* 1998;19:331-40.

**How to cite this article:** Binegdie AB, Sherman CB, Schluger NW. Pleurisy and bilateral pleural effusions after administration of atorvastatin. *J Pan Afr Thoracic Soc* 2020;1(1):39-41.