Eur J Clin Pharmacol (2012) 68:451–452
DOI 10.1007/s00228-011-1140-2

LETTER TO THE EDITORS

Aspiration of alendronic acid leading to localized bronchiectasis

Gordon I. A. MacDonald · Graeme P. Currie · David M. Reid

Received: 5 September 2011 / Accepted: 3 October 2011 / Published online: 19 October 2011

Sir,

We report the case of a 70-year-old lady diagnosed with osteoporosis 4 years ago following a dual energy x-ray absorptiometry (DXA) scan and who was subsequently commenced on weekly alendronic acid. She received standard information regarding how to take alendronic acid. For 1 year, she complained of chronic cough with intermittent sputum production; her symptoms coincided with a severe "choking episode" at the time of taking her weekly alendronic acid tablet. Despite several courses of antibiotics and regular use of seretide inhaler and flixonase nasal spray, her symptoms persisted. Peak flow recordings for several weeks showed no diurnal variation indicating that asthma was not the diagnosis. She had no nasal symptoms and no gastro-oesophageal reflux symptoms. Her other regular medication included calcichew and nifedipine.

Clinical examination revealed reduced air entry at the right lung base. A chest radiograph was normal, and spirometry was within normal limits. To exclude a foreign body in the endobronchial tree as a cause of her chronic cough, bronchoscopy was arranged. This showed inflammatory changes within the right lower lobe bronchus with pus evident within basal segments. Bronchial washings contained inflammatory cells, predominantly neutrophil polymorphs, and *Streptococcus pneumoniae* was cultured. A high resolution CT thorax demonstrated changes of localized bronchiectasis within the right lower lobe (Fig. 1). In view of this, her chronic cough was thought to be most likely due to localized bronchiectasis following aspiration of alendronic acid. She was treated with a prolonged course of high dose antibiotics following which her cough completely resolved.

There is only a single case report of damage to the respiratory tract following aspiration of alendronic acid [1]. A 68-year-old female patient aspirated an alendronic acid tablet and presented with hoarseness and productive cough. Bronchoscopy demonstrated severe damage to the larynx, trachea and bronchial tract. The patient in this case had oropharyngeal dysphagia, and oral bisphosphonates should probably be avoided in such patients. While aspiration of foreign bodies is much more common in children, it can occur in adults particularly in the presence of depressed consciousness level or swallowing problems. Undiagnosed and retained foreign bodies can mimic other common respiratory conditions. A high index of suspicion is essential as a history of aspiration may not always be recalled by adults. Although bronchoscopy remains the mainstay for diagnosis and removal of retained foreign bodies to avoid long-term sequelae, CT can also be helpful to discover unsuspected aspirated foreign bodies [2].

Aspirated tablets are an uncommon cause of bronchiectasis. However nitrogen-containing bisphosphonates are known to cause apoptosis of cells of different varieties in vitro including osteoclasts [3], and the same pathological feature has been noted to be associated with oesophagitis related to alendronic acid use [4]. It is entirely feasible that the same pathology was associated with the initial injury to the bronchial tree mucosa in this case with subsequent development of localized bronchiectasis.

G. I. A. MacDonald
Department of Rheumatology, Aberdeen Royal Infirmary, Aberdeen, UK

G. P. Currie
Department of Respiratory Medicine, Aberdeen Royal Infirmary, Aberdeen, UK

D. M. Reid (✉)
Division of Applied Medicine, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK
e-mail: d.m.reid@abdn.ac.uk

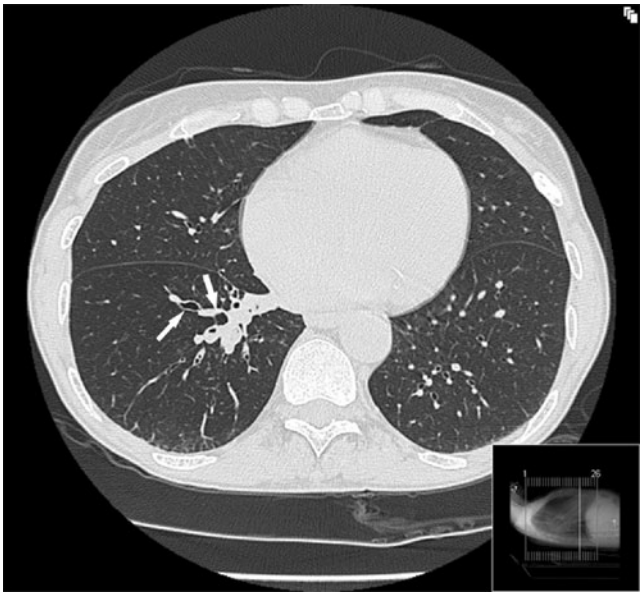

Fig. 1 Axial CT showing right lower lobe dilated bronchi (see *arrows*), consistent with localized bronchiectasis

Given the increasing use of bisphosphonates, the risk of harm caused by them is low, although atypical stress fractures, osteonecrosis of the jaw, atrial fibrillation and gastrointestinal lesions have all been reported [5]. The Medicines and Healthcare Products Regulatory Agency (MRHA) in the UK has received a number of reports of respiratory side effects via the Yellow Card System including cough (12 reports of cough out of 4,712 total reactions on 2,443 adverse drug reaction reports, although a final diagnosis is not recorded in such reports).

This case highlights the potential risk of aspiration of alendronic acid causing damage to the bronchial tract. We should remain vigilant and bear this in mind as a rare but possible cause of chronic cough in patients taking oral bisphosphonates, especially if a history of possible aspiration is obtained.

Acknowledgements We are grateful to Melissa Byrnes, Medicine Information/Formulary Support Pharmacist, Aberdeen Royal Infirmary for her assistance with the literature search.

Disclosure statement The authors have declared no conflicts of interest.

References

1. Jungblut SA et al (2007) Damage to the respiratory tract due to aspirated alendronate. Pneumologie 61(12):771–773
2. Zissin R et al (2001) CT findings of the chest in adults with aspirated foreign bodies. Eur Radiol 11(4):606–611
3. Suri S et al (2001) Nitrogen-containing bisphosphonates induce apoptosis of Caco-2 cells in vitro by inhibiting the mevalonate pathway: a model of bisphosphonate-induced gastrointestinal toxicity. Bone 29(4):336–343
4. Gómez V, Xiao S-Y (2009) Alendronate-induced esophagitis in an elderly woman. Int J Clin Exp Pathol 2(2):200–203
5. Abrahamsen B (2010) Bisphosphonate adverse effects, lessons from large databases. Curr Opin Rheumatol 22(4):404–409