Relapsing nitrofurantoin-induced pneumonitis

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1. Case report

A 72-year old never smoker presented with lethargy and exertional breathlessness of two months' duration. Nine months previously on a holiday to Italy she had experienced malaise and minor haemoptysis, the latter of which recurred intermittently. The only past medical history was of osteoporosis, for which she took calcium supplements. Initial history taking revealed no other regular medication use or exposure to birds, animals or organic materials.

A chest radiograph two months prior to initial hospital assessment showed consolidation in the right mid zone and prominent markings in both lower zones (Fig. 1); these changes were resolving one month later (Fig. 2). Initial spirometry produced a forced expiratory volume in 1 s (FEV1) 2.03L and forced vital capacity (FVC) 2.43L (113 and 111% predicted). Carbon monoxide transfer factor (TLCO) was 62% predicted. Blood tests including C-reactive protein (CRP), full blood count and erythrocyte sedimentation rate (ESR) were normal.

Computed tomography (CT) shortly after her initial visit revealed widespread parenchymal distortion in the mid and lower zones and ground glass change towards the apices but no mass lesion or lymphadenopathy (Fig. 3). Bronchoalveolar lavage revealed no evidence of bacterial, mycobacterial or viral infection, and cytology showed non-specific inflammation.

One month after initial outpatient assessment, the patient's symptoms had greatly improved. However, two days after re-attending clinic she was admitted to hospital with acute bilateral pleuritic pain and marked dyspnoea. Clinical examination was unremarkable other than a heart rate of 106 but a chest radiograph showed further right mid zone consolidation (Fig. 4). Her CRP was 33 mg/L and neutrophil count 9.6 \times 10^9/L. She tested negatively for human immunodeficiency virus and an autoimmune screen was negative. No cause for this exacerbation was identified but her symptoms improved rapidly following empirical treatment with oral prednisolone for a presumed diagnosis of non-specific interstitial pneumonia. Early outpatient follow up was organised with consideration of lung biopsy.

The cause of this patient's relapsing respiratory condition only became apparent at the next clinic visit, following a very detailed enquiry into the course of events between her previous clinic attendance and the acute hospital admission. At this time the patient volunteered she had taken nitrofurantoin several hours prior to becoming unwell, in order to prevent post-coital cystitis. On further questioning, she had been taking this medication intermittently over the preceding 18-month period.

Avoiding nitrofurantoin completely led to a good symptomatic recovery over the following months, and no further exacerbations. High resolution CT four weeks after hospital admission showed improvement from the previous study (Fig. 5) and TLCO three months post-discharge was also significantly better at 91% predicted.

2. Discussion

Although occurring in less than 1% of patients taking the drug, nitrofurantoin is well-recognised to have adverse pulmonary effects including acute interstitial pneumonia, organising pneumonia, pulmonary fibrosis, acute respiratory distress syndrome, diffuse alveolar haemorrhage, pleural effusion and...
acute bronchospasm. In one series of 18 cases of chronic nitrofurantoin-induced lung disease, 94% of individuals were women (median age of 72) prescribed the drug daily to prevent recurrent urinary tract infections. Following cessation of nitrofurantoin use, and the use of steroids in some cases, clinical outcome is usually favourable, although residual radiological abnormalities can persist.

This case was unusual due to the relapsing pattern of illness. To our knowledge it is the first report of lung disease caused by intermittent rather than chronic daily usage of nitrofurantoin. The diagnosis here was initially missed because the patient did not report taking nitrofurantoin when asked about medication. The case highlights the importance of detailed history taking in complex cases, and that patient modesty or embarrassment may lead to important omissions of personally sensitive key information.

Patient consent

Written patient consent was obtained.

Conflicts of interest

The authors declare no conflict of interest.

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