Drug-induced disease is a fairly common problem in routine medical practice. Some adverse drug effects may be predictable on a pharmacological basis. However, drug-induced disease is frequently difficult to explain on the basis of the known biochemistry or pharmacology of a drug.

Interstitial pneumonitis and/or fibrosis is the most common form of drug-induced pulmonary interstitial disease. Carbamazepine is a very rare cause of drug-induced pulmonary interstitial inflammation (1). In this report, we describe a carbamazepine-induced pulmonary interstitial pneumonitis.

The patient was a 33-year-old male who had been suffering from a cough for 6 months. His history was otherwise unremarkable except for early medication of carbamazepine which he had been taking for 2 years for manic-depressive illness. The physical examination was normal except for coarse crackles heard in both hemithoraces. Screening labs were within normal limits. There was no peripheral eosinophilia. Cold agglutinins were negative for Mycoplasma pneumonia. His chest roentgenogram showed an increase in interstitial markings most prominently at the lower zones. High resolution computed tomography (HRCT) showed a widespread ground glass appearance, irregular opacities and nonseptal linear markings in the lung parenchyma (Figure 1). Anti-nuclear antibody, anti-DNA antibody and rheumatoid factor were all negative. Pulmonary function tests including carbon monoxide diffusing capacity were also in the normal range. Bronchoscopy with a transbronchial lung biopsy revealed interstitial lymphocytic infiltration. The BAL cells revealed marked lymphocytosis (35%). A smear of the BAL fluid for acid fast bacilli and culture for Mycobacterium tuberculosis were negative.

The clinical picture was considered to be compatible with interstitial pneumonitis due to carbamazepine use, since there was no historical, physical or laboratory finding consistent with any other interstitial lung disease. A decision to withdraw the drug for further follow-up was made since the patient was clinically well and had no laboratory abnormalities. For the same reason, a repeat lung biopsy was deemed unnecessary. Two months later, without any medication for interstitial pneumonitis, HRCT showed a completely normal lung parenchyma (Figure 2). The complete and rapid resolution of radiological changes after cessation of carbamazepine confirmed our initial diagnosis.

Some adverse effects of drugs pose a major challenge to clinicians. It is impossible to predict all the complications that may be caused by any medication. In the USA, up to 5% of hospital admissions are the result...
of an adverse drug reaction, and as many as 15% of patients in hospital will have an adverse reaction to a drug given to them during their period of hospitalisation (2).

All parts of the respiratory apparatus, from the lungs and thorax to the respiratory centres in the brain, are vulnerable to toxic effects exerted by agents administered for therapeutic purposes. At present approximately 40 commonly used drugs have been shown to affect the lungs adversely. Most of these are cytotoxic drugs (2).

Carbamazepine is a commonly used anticonvulsant associated with a wide range of adverse reactions including peripheral eosinophilia, agranulocytosis, aplastic anaemia, generalised lymphadenopathy, exfoliative dermatitis and lupus-like syndrome in addition to eosinophilic interstitial pneumonitis. Although the mechanisms of these reactions are obscure, it has been reported that carbamazepine alters immune function in a variety of ways (3,4). Recently, Furst and Uetrecht showed that the major metabolite of carbamazepine, 9-acridine carboxaldehyde, a product of oxidisation of the drug by activated neutrophils, causes white cell death or impairs their function (4). Our case differs from classical carbamazepine-induced adverse reactions because of the presence of interstitial lymphocytic infiltration and the absence of eosinophilia.

Like carbamazepine, numerous other medications are associated with adverse drug reactions affecting the lung, airways and pleura, and this fact should be born in mind when a patient appears with an unexplained pulmonary problem.

References