Pulmonary infiltrates with eosinophilia syndrome in ibuprofen overdose

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Abstract
We describe the case of a 45-year-old female who developed pulmonary infiltrates and mild eosinophilia following an overdose of ibuprofen. We believe this was a case of pulmonary infiltrates with eosinophilia (PIE) syndrome and discuss the relevant literature. Although rare, PIE syndrome should be considered in those taking nonsteroidal anti-inflammatories who develop unexplained pulmonary infiltrates.

A rare complication of non-steroidal anti-inflammatory drug (NSAID) use is pulmonary infiltrates with eosinophilia (PIE) syndrome.

We report a case of suspected PIE syndrome in the context of NSAID overdose.

Case report
A 45-year-old female with background of opiate addiction presented with a 2-day history of drowsiness following a drug overdose of 72 Neurofen Plus tablets (containing codeine and ibuprofen). Blood tests revealed acute renal failure, markedly deranged electrolytes and features of renal tubular acidosis.

A chest X-ray (CXR) showed bilateral patchy peripheral infiltrates, affecting the right midzone and left upper lobe. A computed tomography pulmonary angiogram (CTPA) excluded pulmonary embolism (PE), but showed multiple areas of ground-glass attenuation affecting predominantly the peripheral upper lobe, along with trace pleural effusions.

The patient had no symptoms of infection and remained afebrile but slightly tachypnoeic. Her C-reactive protein was 53 mg/L and white blood cell count was $17.7 \times 10^9/L$. The eosinophil count was initially normal but rose to $0.6 \times 10^9/L$ (N<0.5) after 3 days. She was treated with intravenous fluids and oral antibiotics for possible aspiration.

Her renal function and acidosis improved over 5 days. A repeat CXR showed reduced but persistent infiltrates that had resolved at follow-up after 4 weeks.

Discussion
Pulmonary infiltrates with eosinophilia (PIE) syndrome is characterised by diffuse eosinophilia: peripherally, on bronchial alveolar lavage, and on lung biopsy.\(^1\) Symptoms, where present, include fever, cough, dyspnoea, malaise and rash.\(^2\) Typical radiological features are pleural effusions, bilateral upper lobe and peripheral infiltrates and areas of patchy consolidation.\(^3\)
PIE syndrome has been described in the literature in association with around 50 classes of medication.\textsuperscript{1,4,5} NSAIDs have been reported as causative agents and both selective COX2 inhibitors and non-selective NSAIDs have been implicated.\textsuperscript{1,6–8}

The syndrome typically presents 1 to 2 weeks after drug exposure begins, and occurrence is believed to be unrelated to dose or duration of use.\textsuperscript{5} A hypersensitivity reaction is the proposed causative mechanism due to the widespread eosinophilia, rash, and rapid response on drug rechallenge.

Symptoms and signs of NSAID-induced PIE syndrome typically resolve completely within 2 weeks of discontinuation of the implicated medication, although radiological findings may be slower to improve.\textsuperscript{3,8}

Some case studies have suggested an apparent response to systemic or inhaled corticosteroids.\textsuperscript{5,6} Permanent fibrosis is a proposed outcome of PIE syndrome but is rare.\textsuperscript{1}

The actual incidence of PIE syndrome may be underestimated due to poor awareness of this diagnosis and the widespread use of these agents.

A drug reaction should be considered in patients taking NSAIDs who present with pulmonary infiltrates that are otherwise unexplained.

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**References:**


