Eosinophilic fasciitis with pulmonary and pleural involvement

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Summary
We report a case of eosinophilic fasciitis, with the unusual features of pulmonary and pleural involvement. Similar cases which involve the lungs have been reported after exposure to L-tryptophan, but there is no relevant drug history in this case.

Keywords: eosinophilic fasciitis; lung disease

A 50-year-old woman presented with increasing breathlessness of one month's duration without cough or wheeze. She described the sensation as different from her mild asthma which was well controlled on inhaled beclomethasone dipropionate and occasional salbutamol. There was no other drug history. In the past 2 weeks she had noticed the appearance of several nodules, first on her left leg and then a more diffuse swelling in her forearms and hands. Other relevant history was of night sweats for one week, and pain in the right calf.

On examination there were signs of small bilateral pleural effusions, and some inspiratory crackles at the left base. There was diffuse non-tender induration of both forearms and non-tender areas of induration on her legs, of about 5 × 3 cm. There was tendon swelling in her palms with triggering of fingers.

Initial investigations showed a normocytic anaemia, blood eosinophilia, raised inflammatory markers (C-reactive protein 95 mg/l (normal range <10 mg/l), plasma viscosity 1.92 cp (1.5–1.72)), and a restrictive pattern of ventilatory function. These results and the response to steroids are summarised in the table.

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Table A summary of results of investigations used to monitor progress, from presentation to last review

Time from steroids (weeks)	*Hb (g/dl)*	*Eos ($\times 10^9$/l)*	*Plt ($\times 10^9$/l)*	*Visc (cp)*	*FEV1 (l)*	*FVC (l)*	*DLCO (mmol/kPa/min)*
−2	9.0	6.73	550	1.92	1.19	1.5	
−1	8.7	6.25	664		1.0	1.17	2.2
+1	9.3	0.95	634	1.89	1.8	2.6	
+2	8.4	0.29	521		2.25	3.3	
+5	9.5	0.1	352	1.63	2.1	3.2	5.6
+24	9.6	0.24	323	1.57	1.9	3.2	6.8
(predicted				<1.72	2.47	2.97	6.28)

Key : Hb = haemoglobin (normal range 11.5–16.5), Eos = eosinophil count (<0.5), Plt = platelet count (150–400), Visc = plasma viscosity (1.5–1.72), FEV1 = forced expiratory volume in one second, FVC = forced vital capacity, DLCO = transfer factor for carbon monoxide

Chest X-ray confirmed small bilateral pleural effusions and in addition there was patchy parenchymal shadowing in both lower lobes. Pleural fluid was aspirated, which contained a large number of inflammatory cells, the majority of which were eosinophils. Eosinophils were markedly increased in bone marrow aspirate and trephine samples, and bronchial biopsy showed normal mucosa infiltrated with sheets of eosinophils.

Over the next 2 weeks her health deteriorated, the skin nodules and pleural effusions enlarged, and she developed a low grade pyrexia and a right foot drop. High resolution computed tomography (CT) of the chest showed pronounced interlobular and peribronchovascular nodular interstitial thickening, and bilateral pleural effusions, but no distortion of the lung architecture. Echocardiography was normal. Nerve conduction studies were normal, apart from suggesting a possible proximal S1 root lesion. Histology of deep skin and fascial biopsy from a lesion on the right forearm showed subcutaneous infiltration with eosinophils, predominantly perivascular in distribution, with focal fibrosis. The appearances were those of eosinophilic fasciitis.

She was started on enteric-coated prednisolone 30 mg daily and she improved sufficiently for discharge from hospital within a week (see table). Six months later she is well, with no induration, no chest symptoms, and a normal chest X-ray. She is currently taking prednisolone 5 mg daily and inhaled beclomethasone dipropionate 100 μg bid.

Discussion

Eosinophilic fasciitis was first described by Shulman in 1974,[1] and shares some clinical features with progressive systemic sclerosis, into which it may progress. Its typical presentation is with tender swellings over the limbs, associated with arthralgia, hypergammaglobulinaemia and eosinophilia, but relative sparing of the viscera. The aetiology is unknown, but 50% of cases occur after strenuous exercise. The sex incidence is equal, and the mean age at onset is 47 years. Most cases resolve spontaneously within 3–5 years, and response to high-dose prednisolone is seen in about 70% of cases.[2 3]

Restrictive pulmonary defect has been shown before but not to this degree,[4–6] and there is no report of abnormal chest X-ray or diffusion capacity. Pleural effusions have not

previously been described. Silver *et al* described clinical and histological features consistent with but not identical to eosinophilic fasciitis as part of eosinophilia-myalgia syndrome after L-tryptophan ingestion.[7] This disease was recognised in 1989 after an epidemic associated with L-tryptophan use as a diet supplement and antidepressant. The Centres for Disease Control case definition from the epidemic of 1989 comprises (1) peripheral blood eosinophil count greater than or equal to 1×10^9 cells/l, (2) generalised myalgia at some point during the illness severe enough to affect patients' ability to pursue daily activities, and (3) the absence of any infection or neoplasm to account for (1) or (2). A surveillance programme based on this definition found that, of 1075 cases identified, 3% had no recollection of prior L-tryptophan ingestion, and a further 1% had not used L-tryptophan for over one month.[8] During their illness, 59% of all cases had cough or dyspnoea. Of 718 patients who had a chest X-ray, 17% showed pulmonary infiltrates, there were pleural effusions in 12%, and both in 8%. Hibbs *et al* examined a register of eosinophilic fasciitis patients diagnosed prior to 1989, and found that nine of 45 patients had taken L-tryptophan prior to disease onset, and six of these had dyspnoea.[9] None of the 33 who had not taken L-tryptophan had dyspnoea. The authors suggest that the presence or absence of pulmonary disease is a discriminant feature between eosinophilic fasciitis and eosinophilia-myalgia syndrome. However, our patient has no history of any exposure to drugs or preparations possibly containing L-tryptophan, and severe generalised myalgia was never a feature of her presentation.

The possible differential diagnoses of Churg-Strauss syndrome or hypereosinophilic syndrome were considered, in view of the combination of pulmonary eosinophilia and neurological disease, but the diffuse induration of the skin and the tendon involvement in our patient were typical of eosinophilic fasciitis. The proximal S1 root lesion is coincident, but it is unclear whether or not it is related to the eosinophilic fasciitis. Multifocal peripheral polyneuropathy has recently been described with eosinophilic fasciitis.[10]

In summary therefore, this patient had classical eosinophilic fasciitis with the unique features of eosinophilic infiltration of the lung and pleura. It is possible that this case represents a degree of overlap between syndromes, with distinctive features of its own, analogous to mixed connective tissue disease.

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