Case report

A breathless accountant who blew up balloons

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A 34-year-old man, who had never smoked, was referred to our hospital in September, 1998, because of a dry cough, and progressive breathlessness on exercise over the previous year. In 1988, he had been rejected for military service because there were bilateral infiltrates on his chest radiograph, which were interpreted as being due to sarcoidosis. He was examined by a chest physician, but received no treatment. At that time he had no symptoms and was playing handball in the highest league in the country. He was an accountant and did not recall any occupational exposure to dusts or fumes at work. He was also an amateur conjurer, who blew up latex balloons (figure) and made figures with them. In 1987, he competed in a world championship for magicians and was then blowing up about 10 000 balloons per year. The number of balloons went up to 3000 per week (about 150 000 per year). He had no skin eruptions, joint pains, erythema nodosum, or eye problems. He had never abused intravenous drugs. Clinical examination was normal. His chest radiograph showed bilateral infiltrates with bronchial spreading. High-resolution computed tomography of the lungs showed, in addition to the bilateral infiltrates, ground-glass opacities in the upper lobes and nodular infiltrates at the hila. Pulmonary-function tests showed an obstructive pattern with a slightly decreased forced expiratory volume in 1 s (75% predicted), a low-normal total lung capacity (87% predicted), and a decreased carbon monoxide transfer factor (57% predicted).

Two transbronchial biopsy specimens of the middle lobe showed a normal epithelium with partially fibrotic, non-necrotic granulomas in the underlying stroma. Bronchoalveolar lavage showed multiple mononuclear and multinuclear macrophages, in which birefringent polygonal rods could be seen. Talc (confirmed by electron-dispersive X-ray analysis, done by D Dinsdale in Leicester, UK) was found in six balloons the patient used (mean 8 mg [range 4–13]). Because we, as well as the patient, were sceptical that this exposure could have led to his lung disease, we asked him to blow up balloons for two sessions of 1 h each in a laboratory and measured the quantity of inhaled dust by aerial sampling with a high-flow (2 L/min) pump (Dupont S 2500). He blew up 219 balloons in the first session and the aerial exposure assessed by gravimetry was 1·2 mg/m^3. In the second session he used an automatic pump to blow up 216 balloons and the exposure was 0·48 mg/m^3. The American Conference of Governmental Industrial Hygienists sets a threshold limit for talc at 2 mg/m^3 (for a conventional 8 h and a 40 h working week).[1] On the basis of these findings, we advised our patient to stop doing his performance. Treatment with methylprednisolone was started in October, 1998 (32 mg/day, with tapering of the dose over 4 months), and was followed by an improvement in pulmonary function with a ventilatory capacity of 110% predicted, total lung capacity of 102% predicted, a carbon monoxide transfer factor of 86% predicted, and a forced expiratory volume in 1 s of 77% predicted in May, 1999.

The amateur magician
The patient gave his consent for the publication of this picture.

Talc is used in the paint, pharmaceutical, and cosmetics industries.[2] Three distinct pathological types of talc-induced pulmonary lesions may occur: nodular lesions, diffuse interstitial fibrosis, and foreign-body granulomas. Talc granulomatosis can mimic sarcoidosis, but the finding of birefringent particles in the bronchoalveolar lavage fluid by polarised microscopy must strongly challenge a diagnosis of sarcoidosis.[3] This admittedly exceptional case shows that caution should always be exercised when making a diagnosis of sarcoidosis and that recreational as well as occupational exposures[4] must be considered.

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