

# Thorax

## Editorials

### Surgical management of pulmonary aspergilloma

P H Kay

The formation of an aspergilloma in a pulmonary cavity is a rare but potentially life threatening complication for a patient who is already challenged by chronic lung disease. A review of the surgical literature has revealed only 14 major articles published on this subject in the past 36 years,<sup>1-14</sup> and each series reports an average of 2-3 cases per year. The clinician must therefore base his management of the individual patient on best current practice rather than evidence from a prospective study. Two articles are published in this issue of *Thorax* – one by Chen and colleagues from the National University Hospital of Taiwan<sup>15</sup> and the other by El Oakley *et al* from the Royal Brompton Hospital London<sup>16</sup> – which develop the surgical philosophy of this disease process.

The spores of *Aspergillus fumigatus* are widespread in the environment and the organism is commonly found in sputum cultures. Saprophytic colonisation of pre-existing pulmonary cavities predominantly in the upper lobes leads to the formation of a fungus ball. The aspergilloma is a rounded necrotic mass of matted hyphae, fibrin, and inflammatory cells which usually lies free within the cavity. Radiographic and computed tomographic scanning show a diagnostic crescentic radiolucency.

The most common preceding lung lesion in all series is an open healed tuberculous cavity, 6% of patients developing an aspergilloma in a three year observation period.<sup>17</sup> The airborne method of spread and chronic underlying pulmonary pathology lead to both multiple (22%) and metachronous (7%) aspergillomas developing in an individual patient.<sup>7</sup> Furthermore, spontaneous resolution of the aspergilloma may occur.<sup>17</sup>

Erosion of a bronchial artery leads to haemoptysis. This is the most common presenting symptom and can be life threatening in up to 30% of cases.<sup>7</sup> Neither the size or complexity of the lesion nor the presence of a warning minor haemoptysis can predict those patients who will progress to life threatening haemoptysis.<sup>7</sup>

Medical treatment has little place in the management of pulmonary aspergillomas. Antifungal agents – whether given orally, intravenously, by inhalation, or instilled directly into the cavity – have had no consistent success in either alleviating symptoms or treating the disease process.<sup>7,10,18,19</sup> Similarly, bronchial artery embolisation has been largely unsuccessful owing to the difficulty in identifying the bleeding artery.<sup>20</sup>

Surgery offers three potential benefits: control of symptoms, prevention of haemoptysis, and prolongation of life. However, the technique involved ranks amongst the most complex in thoracic surgery. Years of chronic infection produce thickened fibrotic lung tissue, induration of the hilar structures, and complete obliteration of the pleural space and fissures. Previous series have reported mortality rates of up to 25% and morbidity including excessive

haemorrhage, residual pleural space, bronchopleural fistula, and empyema of up to 60%.<sup>3</sup> The fluctuating nature of the disease process and the modest surgical results restricted surgery to those patients with significant symptoms.

El Oakley and colleagues have continued this cautious approach, advocating surgical resection in patients with life threatening haemoptysis or multiple hospital admissions.<sup>16</sup> In this issue of *Thorax* they report excellent results in 17 patients who underwent surgical resection of the aspergilloma over a 14 year period. They stress the importance of assiduous surgical technique to reduce both air leaks and postoperative haemorrhage, and the use of supplementary thoracoplasty to obliterate the potential space.

Chen and colleagues<sup>15</sup> present details of 67 patients over a 27 year period. This is the largest published series of surgical resection for aspergilloma and again shows a dramatic reduction in both the mortality and morbidity of the procedure. In the absence of effective medical treatment they now recommend early surgery in all patients with good lung function before life threatening haemoptysis or severe pulmonary damage relating to the primary pathology increases the mortality and morbidity of the ensuing operation. Such an approach is appealing in patients who have a single simple aspergilloma.<sup>2</sup> However, in patients with more complex pulmonary pathology both the chest physician and thoracic surgeon must together weigh the potential risks and benefits for each individual.

The most challenging patients are those with severe haemoptysis who have suffered such severe lung destruction that they are unfit for surgical resection. The multiloculated cavity with its raw surface and frequently added superinfection is analogous to the pathology of chronic osteomyelitis. The basic surgical principles involve removal of the aspergilloma and obliteration of the cavity and its interstices. Although El Oakley and colleagues found the technique of cavernostomy and thoracomyoplasty unsatisfactory owing to atrophy of the latissimus dorsi pedicle, I believe that this is the only logical surgical approach. Indeed, the combined departments of plastic surgery and thoracic surgery in Leeds have successfully used this approach on two occasions during the last five years.

The two papers in this journal confirm that the incidence of pulmonary aspergilloma remains low. The dramatic improvement in the surgical results of both groups suggests that early surgical resection is now the treatment of choice in those patients with adequate lung function.

Department of Cardiothoracic Surgery,  
Leeds General Infirmary,  
Great George Street,  
Leeds LS1 3EX, UK

P H KAY

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