

**Figure 1** Audiogram showing bilateral high frequency hearing loss.

mutation. The prevalence of the m.1555A>G mutation in the UK is quoted as 1 in 40 000, but this figure is based on studies in children who are born deaf. Variable gene penetrance and aminoglycoside exposure means the actual prevalence is likely to be higher.<sup>3</sup>

The use of aminoglycoside antibiotics is widespread in CF care. First isolation of *P aeruginosa* in a patient with CF necessitates treatment to eradicate it. Nebulised and oral antibiotics or intravenous antibiotics are used.<sup>4</sup> For chronic *P aeruginosa* infection, intermittent intravenous antibiotics are frequently required. To prevent antibiotic resistance, two agents are used—usually a  $\beta$ -lactam and an aminoglycoside.<sup>5</sup> Ototoxicity and renal toxicity with aminoglycosides are well recognised, but these factors need to be balanced against clinical need.

The cost-effectiveness of screening for the m.1555A>G mutation in individuals who will potentially receive aminoglycosides makes financial sense, given the costs to the health service and to society of meeting the needs of profoundly deaf individuals.<sup>3</sup> This case highlights the potential need for more widespread screening for the m.1555A>G mutation in patients with CF. This will ensure that we can protect against aminoglycoside ototoxicity where possible, or at least fully inform our patients of the potential risk of deafness with these antibiotics.

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## Anti-IgE in Churg–Strauss syndrome

The cases reported by Grohé *et al* are interesting, but they need to be better debated.<sup>1</sup> As far as we know, we were the first group to administer anti-IgE to a patient with Churg–Strauss syndrome (CSS) with asthma.<sup>2,3</sup>

In our patient, CSS had shown remission with systemic corticosteroid but he still presented with asthma which was difficult to control. The asthma did not improve despite the use of high-dose inhaled corticosteroids, long-acting  $\beta_2$  agonists and several courses of steroid pulse therapy. Omalizumab was given and his asthma was controlled as well as could be expected, but a marked improvement in eosinophilia was also observed. The patient was not taking systemic corticosteroids or immunosuppressive agents at this time.

Besides the IgE blockage effect, studies have shown antiallergic and anti-inflammatory properties of anti-IgE, among which is the reduction in circulating and tissue eosinophils.<sup>4</sup> On the other hand, there are at least three cases of temporal association between anti-IgE use and the development

of CSS.<sup>5</sup> CSS was probably caused by systemic steroid tapering in these cases, rather than anti-IgE use.

In the report by Grohé *et al*, it was not clear if the patients showed only improvement in respiratory symptoms or also in other CSS manifestations after introduction of anti-IgE. Moreover, at the time omalizumab was administered, the patients were also taking corticosteroids and immunosuppressives (all these drugs were acting).

Together, these cases suggest that omalizumab can be used in patients with CSS to treat and control asthma, but they also show that anti-IgE alone is not enough to control CSS activity. Systemic corticosteroids are the drug of choice to treat this disease.<sup>5</sup>

Although we are getting more evidence about the safety of omalizumab in patients with asthma and CSS, larger long-term studies are needed before the widespread use of anti-IgE can be recommended and also to verify if it is effective in the treatment of CSS.

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## Authors’ reply

We thank Giavina-Bianchi *et al* for their response to our letter. Treatment of patients with Churg–Strauss syndrome (CSS) remains a challenge owing to the heterogeneity of the underlying symptoms. We have followed our patients since early 2006 and have noticed an overall improvement in both pulmonary (obstructive airway disease) and systemic (ie, congestive) heart failure as a result of the addition of omalizumab. In particular, compared with the prior worsening, the clinical course of both patients

remains improved since the addition of omalizumab. Both patients have also been on long-acting  $\beta_2$  agonists and inhaled corticosteroids in standard doses throughout the time to control mild asthma symptoms (GINA I). In addition, they have required low dose prednisolone (5–10 mg) over the course of time to control blood eosinophilia, a hallmark of CSS exacerbation. We agree with Giavina-Bianchi *et al* that the long-term control of CSS requires immunosuppressant therapy and consider omalizumab as an effective add-on therapeutic agent. Because of the variability in the symptoms presented and the subspecialty of the referral centres who see these patients, a registry of patients with CSS is needed, based on clinical symptoms, regional background and therapeutic strategies. The underlying mechanisms as to how eosinophilia and cytokine signalling affects the course of the disease remains elusive and requires standardised treatment options and clarification of the molecular pathways to improve patient care.

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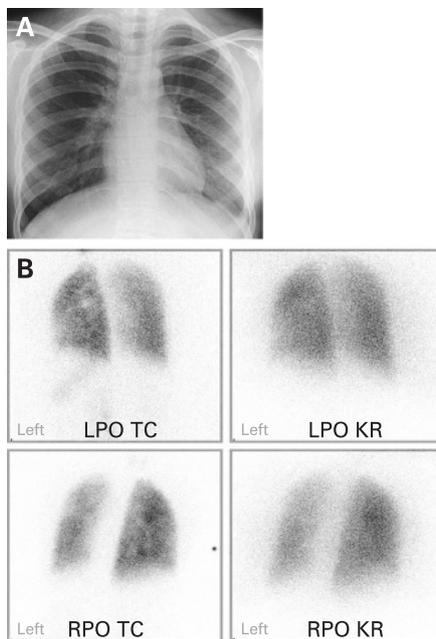
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## Ventilation-perfusion scans in children treated for empyema

Empyema is a frequent complication in children hospitalised with pneumonia. Parenchymal changes have been demonstrated on chest radiographs and chest CT scans in empyema,<sup>1</sup> and it is plausible that functional outcome may be affected. Studies that have used spirometry in children of school age to assess function following empyema have largely demonstrated normal lung function.<sup>2</sup> The ventilation-perfusion (V/Q) scan has been used occasionally in follow-up,<sup>3</sup> but evidence is lacking as to its value in this context.

We retrospectively reviewed V/Q scans of eight children originally recruited as part of a published study comparing video-assisted thoracoscopic drainage (VATS) with percutaneous chest drain insertion and urokinase for empyema.<sup>4</sup> Our aim was to assess whether empyema causes functional abnormalities following clinical resolution.

All subjects in the original study consented to have a V/Q scan at follow-up. Ethical approval was obtained. Of the total 60 children recruited (median age 3.7 years, range 0.5–15.8), only 8 (median age 7 years, range 1.1–14.4) agreed to have a V/Q scan. Seven of these had VATS and one had percutaneous drain insertion with urokinase.



**Figure 1** (A) Chest radiograph showing residual left pleural shadowing and blunting at the left costophrenic angle. (B) Ventilation/perfusion (V/Q) scan (posterior oblique views) showing borderline reduction in ventilation and perfusion of the left lung compatible with minimal left-sided pleural thickening seen on the chest radiograph. V/Q scan images were acquired with a single head gamma camera equipped with a parallel hole collimator. Tc<sup>99m</sup>-Marco aggregates of albumin and 81m-krypton were used for perfusion and ventilation, respectively.

The median time from hospital discharge to V/Q scan and contemporaneous chest radiography was 6.5 months (range 4.5–13). All children had made a complete clinical recovery at assessment. All follow-up chest radiographs showed minor changes such as pleural shadowing. No major focal parenchymal defects were found on the V/Q scan in any of the children. Six of the V/Q scans showed normally distributed ventilation and perfusion. One scan, following a left empyema treated with VATS, showed global borderline reduction in the function of the left lung (fig 1B), which correlated well with the chest radiograph (fig 1A). Another V/Q scan showed a small focal abnormality in part of the right lower lobe on both ventilation and perfusion studies.

We found that V/Q scans in children with empyema at a median interval of 6.5 months following discharge did not demonstrate major focal defects.

The main limitation of our observation is the small number of children studied. All the children in our study were previously healthy and were reluctant to take part in a potentially unpleasant investigation (intravenous cannulation for injecting radioisotope) once the acute illness had resolved. The only paediatric study evaluating lung

perfusion following empyema found that more than 50% of the children had diminished perfusion on the side of the empyema.<sup>3</sup> However, the time to the perfusion scan spanned >10 years following empyema, with no details of patients' ages, management, morbidity and interval infections.

The prognosis in children with empyema is excellent, with most making a complete clinical and radiological recovery.<sup>5</sup> British Thoracic Society guidelines recommend that children should be followed up after discharge until complete clinical and near normal radiological resolution.<sup>5</sup> However, there is a dearth of studies evaluating long-term functional outcome in children with empyema which needs to be addressed.

We conclude that medium-term lung function as assessed by V/Q scans in a small series of children with resolved empyema is normal or near normal. V/Q scans do not add additional information to functional assessment in a clinically well child following empyema.

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## Pleurodesis by talc poudrage under simple medical thoracoscopy: an international opinion

We read with interest the editorial by Davies *et al*<sup>1</sup> and were pleased to learn that talc is preferred by most respiratory physicians worldwide as an effective pleurodesing agent. Based on scientific data, the authors