Facilities for investigating occupational asthma in UK non-specialist respiratory departments

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Introduction

Occupational asthma remains a common and important occupational disease in the UK [1], with exposures in the workplace accounting for between 9 and 15% of all adult cases of asthma [2]. Early and accurate diagnosis of this avoidable disease is vital to limit chronic disease and minimize adverse socioeconomic outcomes [3–5]. Occupational asthma diagnosis, however, is often challenging [6, 7], and no formally agreed diagnostic pathway exists in the UK at present. National published guidelines, however, advocate that health practitioners who suspect a worker of having occupational asthma should make an early referral to a physician with expertise in occupational asthma [8].

A modified consensus RAND appropriateness exercise (a systematic method of combining expert agreement and evidence) was recently undertaken by a group of 10 UK-based occupational respiratory disease specialists, who attempted to formally agree on the clinical facilities they felt were necessary to run a specialist occupational asthma clinic [9]. Of the 28 facilities considered at the start of the exercise, 18 essential tools were agreed upon. Two of these were considered an absolute necessity in all patients, and 16 classified as the facilities having to be available if needed.

This study aimed to investigate whether these facilities are available in UK non-specialist secondary care respiratory departments and to document tertiary care referral patterns.

Methods

A random stratified sample of 100 hospitals was identified from a sampling frame, stratified by region, containing all UK hospitals with at least one respiratory consultant in a full-time post. These data were generated using available information from the current national register of respiratory departments compiled annually by the British Thoracic Society (BTS). The most senior consultant within each hospital respiratory department was contacted by letter and invited to participate in the study, or alternatively to nominate a consultant colleague to take part.

Background

The facilities which should be available to physicians offering specialist occupational asthma services have recently been agreed upon by a UK panel of experts.

Aims

This study aimed to investigate whether these facilities are available in UK non-specialist secondary care respiratory departments and to document tertiary care referral patterns.

Methods

A random sample of 100 UK respiratory units was selected, and the lead consultant invited to participate. Face-to-face interviews were conducted to document information on departmental facilities available for investigating cases of occupational asthma and utilization of tertiary referral centres.

Results

In total, 66% of consultants interviewed had seen a case of occupational asthma in the previous month, and 76% reported having ever referred a patient with suspected occupational asthma to a specialist centre for further investigation (referral distance range 1–111 miles). All the departments were able to perform the investigations previously deemed an absolute necessity in all patients. The availability of in-house facilities that were deemed as must be available varied between 3–100%.

Conclusions

The results of this study demonstrate that while the majority of basic facilities are widely available, many respiratory departments do not have direct access to investigations routinely required to investigate occupational asthma. Access to specialist occupational respiratory centres varies within the UK, and in some parts of the country involves long travelling distances for patients.
Information detailing the study had been posted on the BTS Web site prior to recruitment. Non-respondents were sent a reminder regarding the study after 4 weeks, again inviting participation. Data were collected between April 2004 and January 2005 by face-to-face interview, carried out by three members of the research team. A structured interview pro forma was produced for use in the interviews to ensure that data were collected in a standardized manner. Data regarding the availability of hospital facilities and use of tertiary referral centres were recorded during the interviews and transferred to a database.

**Results**

Of the 100 hospitals approached, six departments carried out dedicated occupational respiratory clinics and were therefore not included in the study. Thirty-four of the remaining 94 departments participated in the study (participation rate 36%).

In total, 66% of consultants had seen a case of occupational asthma in clinic the previous month, and 76% reported having previously referred a patient with suspected occupational asthma to a specialist centre for further investigation. The mean referral distance to the tertiary centre was 42 miles (range 1–111 miles).

The proportion of hospital departments with each of the facilities available deemed necessary to investigate patients with occupational asthma is shown in Table 1. In this study, the availability of an assessment of atopy was taken as the facility to measure either skin prick tests or specific IgE to common environmental allergens. All hospitals had access to pre-bronchodilator spirometry, the only investigation graded to be an absolute necessity in all patients. The availability of facilities that were deemed as must be available varied between 3 and 100%.

**Conclusions**

This study found that while the majority of basic facilities are widely available in secondary care, many non-specialist respiratory departments do not have direct access to all the tools routinely required to investigate occupational asthma [9]. Although the majority of physicians had previously referred patients to a tertiary occupational centre, the referral distance varied markedly between 1 and 100 miles.

The conclusions that can be drawn from this study are limited to some degree by the participation rate, which in part reflects the design of the study. We believe that the findings are still worthy of discussion, as no other published data in this area exist.

As expected, we found that all hospital respiratory departments were able to perform spirometry, serial peak flow records, chest radiographs and standard haematology/biochemistry blood tests. All UK National Health Service hospitals also automatically have access to some form of toxicology database (TOXBASE), and almost all could measure more detailed respiratory physiology in terms of gas transfer and transfer coefficient.

With regard to the remaining essential facilities [9], availability varied markedly. Demonstrating an objective work-related change in respiratory physiology is key in confirming a diagnosis of occupational asthma, as work-related symptoms are relatively non-specific [6, 8, 10]. Methods of establishing this include serial peak flow records, serial assessments of non-specific airway responsiveness, workplace challenge and specific occupational challenge in a laboratory [6, 8]. Although all departments

<table>
<thead>
<tr>
<th>Facility</th>
<th>Departments with facility, n (%)</th>
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<tbody>
<tr>
<td>Pre-bronchodilator FEV(_1) as a percent of predicted</td>
<td>34 (100)</td>
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<tr>
<td>Pre-bronchodilator FVC as a percent of predicted</td>
<td>34 (100)</td>
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<tr>
<td>Peak flow monitoring and plotting of results</td>
<td>34 (100)</td>
</tr>
<tr>
<td>OASYS II analysis of peak flow records</td>
<td>5 (15)</td>
</tr>
<tr>
<td>Non-specific provocation challenge in the laboratory</td>
<td>17 (50)</td>
</tr>
<tr>
<td>Specific IgE to a wide variety of occupational allergens</td>
<td>15 (44)</td>
</tr>
<tr>
<td>Carbon monoxide transfer factor</td>
<td>33 (97)</td>
</tr>
<tr>
<td>Transfer coefficient</td>
<td>33 (97)</td>
</tr>
<tr>
<td>Non-specific challenge serially at work and away from work</td>
<td>17 (50)</td>
</tr>
<tr>
<td>Specific occupational challenge in the clinical laboratory</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Chest X-ray</td>
<td>34 (100)</td>
</tr>
<tr>
<td>Total IgE</td>
<td>30 (88)</td>
</tr>
<tr>
<td>Skin prick testing/specific IgE to common environmental allergens</td>
<td>25 (74)</td>
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<tr>
<td>Workplace visit by a clinician</td>
<td>7 (21)</td>
</tr>
<tr>
<td>Workplace challenge with peak flow monitoring/spirometry</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Standard haematology/biochemistry (LFT, TFT, Ca(^2+))</td>
<td>34 (100)</td>
</tr>
<tr>
<td>Access to a toxicology database</td>
<td>34 (100)</td>
</tr>
</tbody>
</table>
were able to monitor and plot serial peak flow records, only 15% had access to the recommended computer software designed to analyse them (Oasys-2) [11]. Assessment of non-specific airway responsiveness is a useful objective diagnostic tool in occupational asthma, particularly if negative in a currently exposed symptomatic worker [6], or if variable in relation to workplace exposures [8]. This form of challenge, however, was only available in 50% of departments. As expected, only two departments had the facility to offer either a workplace or a specific inhalation challenge. Although specific inhalation challenges are considered to be the gold standard test for occupational asthma, these types of challenge are not routinely performed in the UK [8]. The utilization of such tests vary markedly between different countries [6, 10, 12]. Immunological tests also play an important role in the diagnosis of occupational asthma, particularly when an individual is exposed to high molecular weight allergens [6, 8]. Although the availability of general immunological tests such as assessments of atopy and total IgE was reasonably high (74 and 88%, respectively) in the study hospitals, the availability of the more clinically useful specific IgE to occupational allergens could only be performed by 44% of departments.

In summary, this study has demonstrated that many of the key facilities, which must be available to physicians investigating cases of possible occupational asthma, may not be available outside of specialist centres. Access to all relevant investigations, particularly challenge facilities, may necessitate travelling to a tertiary referral centre, which in some parts of the country may be over 100 miles away. The forthcoming Standard of Care for occupational asthma by Fishwick et al. (in preparation) may assist in offering more direct guidance to physicians from primary, secondary and tertiary care, as to the best model for investigating this challenging group of patients.

Acknowledgements

The study team would like to thank the consultants who participated in this study.

Conflicts of interest

None declared.

References


Key points

- Many of the key diagnostic facilities required to fully investigate cases of occupational asthma in the UK are only available in tertiary occupational respiratory centres.
- Access to such centres varies within the UK and may require patients to travel over 100 miles.

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