Defining occupational asthma and confirming the diagnosis: what do experts suggest?

Jean-Luc Malo, Anthony Newman Taylor

Diagnosis of occupational asthma

Questionnaires administered in general populations have shown that about 10–15% of subjects with asthma report that their asthma is worse at work.¹ A proportion of these subjects may show what is called occupational asthma (OA)—that is, asthma caused by an agent inhaled at work. It is important to confirm or exclude a diagnosis of OA for at least two reasons: (1) if a worker with OA continues to be exposed to the causal agent, this can lead to worsening of asthma and diminishes the likelihood of resolution; it has been shown consistently that the duration of exposure with symptoms is the principal determinant of persisting asthma after avoidance of exposure^{2–3} and (2) removing a worker from her/his workplace has serious psychosocioeconomic consequences for the worker, often when young, and also for the employer and society.⁴ Advice to leave a job in these circumstances needs to be based on a secure foundation. At a time when expensive high-technology imaging testing is available for all sorts of diseases, it is frustrating that frequently advice to a worker to stay at work or to leave is based only on the clinical history.

In this issue of the journal, Francis *et al*⁵ present interesting results of a survey carried out among expert clinicians who run specialist OA clinics in the UK. In a postal survey followed by an interview, nine experts examined a list of 42 indicators related to the definition of OA and resources to be made available in specialised clinics. Concerning the definition, interestingly, as also proposed by others,^{6–7} 71% of the experts agreed that OA should encompass two varieties of work-related asthma: those with and without a latency period, the former being induced through “sensitisation” and the latter being secondary to an acute exposure to an irritant product. The prioritisation of the 28 indicators, which concerned the investigation of OA, reached slightly less consensus (64%). Objective testing of OA encompasses a

combination of several tools, which can often be schemed in a stepwise fashion.⁸ These include immunological assessment, tests for airway calibre and non-specific and specific responsiveness, and evaluation of inflammation. In this regard, results of this survey are of interest, although possibly of surprise in some aspects:

1. The highest score, which was defined as an “absolute necessity in all patients” was given only to prebronchodilator forced expiratory volume in 1 s and forced vital capacity. Many workers referred for the investigation of possible OA and who are followed up after avoidance of exposure do not have airways obstruction at the time they are seen.^{9–10} Normal airway calibre seems more often the rule than the exception. It is therefore surprising that the experts gave their highest priority to these tests, and also that they did not include the need for post-bronchodilator values, which would provide evidence for asthma in cases where airways obstruction is present.
2. Monitoring, plotting and analysis of serial peak expiratory flow (PEF) measurements were given equal priority with non-specific challenge testing in the clinical laboratory, and a higher score than specific challenge testing and non-specific challenge testing at and away from work. Although serial PEF measurements and measurement of non-specific airway responsiveness are more widely used, specific challenge testing with the occupational agent considered responsible for inducing asthma is generally considered the gold standard in the diagnosis of OA and remains essential in some cases. It is therefore surprising that in considering the necessary resources for a specialist OA clinic, specific occupational challenge testing did

not receive a higher priority. Specific challenge testing is more widely used in Finland, Quebec (Canada) and parts of Belgium, where insurance benefits are more generous, related to earnings and require a stronger basis for the diagnosis than is required by the Department for Work and Pensions in the UK, which specifically excludes the need for a specific challenge test to make a claim for Industrial Injuries Benefit.

3. Finding assessment of sputum eosinophils and measurement of exhaled NO at the lowest rank of priority reflects the delay in research findings reaching clinical practice. In recent years, definitions of asthma proposed in national and international guidelines, and of OA, have consistently included its basis in airway inflammation, which can be satisfactorily assessed through examination of induced sputum. Recent clinical trials have shown that this tool is useful for monitoring asthma.^{11–12} It has also been shown that the addition of sputum cytology to serial PEF measurements in the investigation of OA improves diagnosis.¹³ This test should become available in all centres with special interests in asthma and OA.
4. Finally, one wonders why tests such as carbon monoxide transfer factor (TLCO) and transfer coefficient (KCO), chest x ray, total IgE, standard haematology/biochemistry, radioallergosorbent testing of common environmental allergens and total lung capacity are proposed. These are of limited utility in the confirmation or exclusion of OA. At best, assessments of TLCO and KCO can document the presence of concomitant emphysema, particularly in smokers. Also, internet sites on OA have been developed to help practitioners (see www.bohrf.org.uk). Specific internet databases of OA that listed exhaustively all agents reported as causing OA have been developed (see www.asmanet.com and www.asthme.csst.qc.ca). These are preferable to toxicology databases.

This survey did not obtain opinions on the way in which the stepwise approach recommended in the investigation of OA could be used and applied.¹⁴ There might well be diverging opinions on possible schemes. A point that was not clarified was whether experts who were interviewed proposed the tests that were used in their respective centres. This information would have depicted preferences and

real-life priorities. Moreover, one wonders to what extent the results of this survey were influenced by the recent publication of the British Occupational Health Research Foundation guidelines.⁶ It is certainly to be hoped that this survey represents a first essential step in proposing standards of quality requirements for the accreditation of centres in which OA is investigated, which is a crucial aspect for improving the diagnosis of this condition.

Occup Environ Med 2007;**64**:359–360.
doi: 10.1136/oem.2006.030064

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Competing interests: None declared.

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