

Selected abstracts from: Respiratory Medicine symposium 2008

HOW PATIENTS POISON THEIR LUNGS

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Background The last century witnessed the ascent of cigarette smoking as the major form of tobacco consumption and, as a consequence, the rise in smoking-related diseases. Smoking already kills more than one in ten adults worldwide and by 2030 it will kill an estimated 10 million, accounting for one in six individuals. Much of the work undertaken by respiratory physicians deals with the impact of tobacco smoking. In particular, the majority of cases of lung cancer and chronic obstructive pulmonary disease (COPD) are directly attributable to the habit; however, smoking is also an important contributor to an increased risk of respiratory infections and inadequate control of asthma. Although there is some optimism that cigarette consumption is declining, alternative forms of smoking (which are likely to be more dangerous) are becoming more popular, such as bidis and kreteks.

Many illegal drugs are also smoked and delivered directly to the lung. Cannabis is the most commonly used drug in Scotland, particularly among the young. Several papers have linked cannabis smoking to the development of respiratory symptoms, impaired lung function, the appearance of bullous emphysema and an increased risk of respiratory infections. In addition, there are concerns that cannabis smoking may be accompanied by an increased risk of lung cancer. Crack is becoming an increasingly popular way of taking cocaine and may be an important contributor to the presentation of asthma, as may also be the case with heroin. When taken by the intravenous route these drugs can give rise to talcosis and septic emboli.

Further reading

- Drug Misuse Information Scotland. <http://www.drugmisuse.isdscotland.org>
- Jha P, Chaloupka FJ. *Curbing the epidemic: governments and the economics of tobacco control*. Washington, DC: The World Bank; 1999.
- Scottish schools adolescent lifestyle and substance use survey (SALSUS) national report. *Smoking, drinking and drug use among 13 and 15 year olds in Scotland in 2006*.
- United Nations. *World Drug Report 2006*. Available from: <http://www.unodc.org/unodc/en/data-and-analysis/WDR-2006.html>

Keywords Bidis, cannabis, cocaine, heroin, tobacco

Sponsorship None.

Declaration of interest None declared.

HOW EMPLOYERS POISON THE LUNGS OF EMPLOYEES

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Background Occupational lung disease is common and a preventable cause of respiratory disability. While in the UK some forms of the disease are declining with loss of the relevant industry (e.g. coal mining), others are becoming more apparent (e.g. possible contribution of chemicals to occupational COPD).

Methods or theme Occupational asthma shows little sign of reducing in prevalence according to the Surveillance of Work-Related and Occupational Respiratory Disease (SWORD) data for the UK, while the costs of the disease to UK taxpayers and the patients themselves are high. Recognition of the occupational contribution to asthma and COPD in primary care is generally poor, and approaches to raise awareness in the community have the potential to identify cases early and reduce morbidity. The advent of the European Union Registration, Evaluation and Authorisation of Chemicals (REACH) legislation may have implications in Europe in assessing to what extent occupational and non-occupational chemicals might contribute to occupational airways disease. However, with around 15% of the burden of COPD being attributed to occupation, steps to recognise and reduce relevant exposures would have important benefits in terms of costs to the NHS and quality of life for those affected.

Conclusions Early identification in primary care of occupational airways disease and involvement of employers in recognising and reducing risks would have an important impact on the morbidity from occupational airways disease.

Further reading

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Keywords Occupational asthma, occupational COPD, Reactive airway dysfunction (RADS)

Sponsorship None.

Declaration of interest Professor Ayres has no conflicts of interest save that he undertakes medico-legal work for both plaintiffs and defendants in cases of occupational lung disease.

HOW DOCTORS POISON THEIR PATIENTS' LUNGS

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Background Lung injury as a consequence of prescribed medication has a long and notorious history. While drugs can cause, or exacerbate, all recognised patterns of lung dysfunction, it is the capacity to induce histopathological patterns of interstitial pneumonia that is of particular interest. By careful dissection of the mechanisms by which drugs and other therapies lead to alveolar epithelial injury, lung inflammation and aberrant repair, it may be possible to gain crucial insights into the pathogenesis of the 'idiopathic' interstitial pneumonias, including idiopathic pulmonary fibrosis. For many drugs in clinical use for decades, such as amiodarone and methotrexate, both the mode of action and the mechanism by which lung injury is created are poorly understood.

Recent experience with a new generation of therapies directed towards defined molecular targets, for example epidermal growth factor receptor (EGFR) and tumour necrosis factor- α (TNF- α), has shown that they too are associated with lung toxicity. Since small molecule and antibody-based agents have been designed to be highly target-specific, the unintended biological effects in humans serve to illuminate the true importance of specific cell-signalling pathways that hitherto have been debated only on the basis of in-vitro studies or animal models. Perhaps most remarkable is the observation that, despite interfering with pathways that are often considered critical to maintaining homeostasis, serious toxicity is quite uncommon. The increasing use of these therapies, however, means that chest physicians must feel confident in the diagnosis and management of patients with occasionally catastrophic 'biological' drug-induced lung disease.

Finally, 'nano-medicine' is a rapidly emerging prospect for the future. Early studies offer the hope of improving the safety profile of a generation of drugs of proven efficacy, but as yet so little is still known of the biology of complex nanosystems that the hype should be countered by the potential for causing serious harm.

Recommended reading

- 1 Yoneda KY, Shelton DK, Beckett LA et al. Independent review of interstitial lung disease associated with death in TRIBUTE (paclitaxel and carboplatin with or without concurrent erlotinib) in advanced non-small cell lung cancer. *J Thorac Oncol* 2007; 2(6):537–43.
- 2 Dixon WG, Watson K, Lunt M et al. Rates of serious infection, including site-specific and bacterial intracellular infection, in rheumatoid arthritis patients receiving anti-tumour necrosis factor therapy. *Arthritis Rheum* 2006; 54:2368–76.
- 3 Kukowska-Latallo JF, Candido KA, Cao Z et al. Nanoparticle targeting of anticancer drug improves therapeutic response in animal model of human epithelial cancer. *Cancer Res* 2005; 65:5317–24.

Keywords Biological therapy, drug-induced lung disease, interstitial pneumonia, nano-medicine

Sponsorship None.

Declaration of interest None declared.

CHANGES IN THE BURDEN OF RESPIRATORY DISEASES UP TO 2050

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Background Although it is difficult to extrapolate into the future, trends in disease can be broken down into effects that occur early in life and persist (either because they have a permanent effect or because the exposure itself tends to persist), effects that occur close to the time of the exposure and are quickly reversible, and effects that are due to ageing. This form of analysis provides a way of identifying some trends that are likely to persist into the medium term at least. This method will be illustrated from studies of atopy and asthma, COPD and mesothelioma.

Methods or theme The prevalence of asthma and wheezy illness has increased rapidly over the last half century as measured by symptom questionnaires. More recently, surveys among children have shown some levelling off or decrease in prevalence in the UK. More significantly, however, the prevalence of atopy can be shown to have increased rapidly from generation to generation, from those born in the 1920s until at least the 1970s. Whatever happens among children, the prevalence of atopic disease among adults is likely to continue to increase for some time to come.

In the UK, age-adjusted rates of COPD mortality are falling. The worldwide prediction, however, for numbers of deaths and proportions of deaths is that these will increase. There are two reasons for this prediction. The first is the great increase in the smoking of manufactured cigarettes in countries with low levels of average income, and the second is the epidemiological and demographic transitions of the population structures of these countries to ones with low infant mortality and older populations.

In the case of mesothelioma, the predictions are that the total number of deaths will continue to rise for a while, but the age-adjusted mortality in lower age has been falling for some time. This coincides with the change in exposure to asbestos with import restrictions starting in the 1970s.

Conclusions Although predictions can be upset by events, there are some trends that are likely to be very difficult to change in the short term.

Further reading

- Jarvis D, Luczynska C, Chinn S et al. Change in prevalence of IgE sensitisation and mean total IgE by age and cohort. *JACI* 2005; 116(3):675–82.
- Hodgson JT, McElvenny DM, Darnton AJ et al. The expected burden of mesothelioma mortality in Great Britain from 2002 to 2050. *Br J Cancer* 2005; 92:587–93.
- Law M, Morris JK, Wald N et al. Changes in atopy over a quarter of a century, based on cross-sectional data at three time periods. *BMJ* 2005; 330(7501):1187–8.
- Marks GB, Burney P. Diseases of the respiratory system. In: Charlton J, Murphy M, editors. *The health of adult Britain 1841–1994*. London: The Stationery Office; 1997. p. 93–113.
- Murray CJ, Lopez AD. Alternative projections of mortality and disability by cause 1990–2020: Global burden of disease study. *Lancet* 1997; 349:1498–504.

Keywords Asthma, atopy, COPD, mesothelioma, trends
Sponsorship None.

Declaration of interest Professor Burney has received lecture fees from Astra-Zeneca over the last two years.