Thorax

Editorials

Modelling survival in cystic fibrosis

M Corey

The mantra of improving survival permeates virtually every paper related to prognosis or treatment for cystic fibrosis (CF) in the past two decades. However, the upward trend in the expected duration of life for patients with CF may have lost its momentum. The US and Canadian national CF registries show estimated median survival age increasing to around 32 years in 1989 and 1996, respectively, but in subsequent years no further improvement is seen.[1 2] Although the timing of a plateau in median survival age may differ, consistent patterns are seen in several other population based studies.[3–5] An impressive reduction in infant and childhood CF mortality is almost universal, but projections for these rescued children as they move through adolescence and adulthood cannot be simply extrapolated from the experience of older survivors of less fortunate cohorts. The current life table method, based on age specific mortality in a recent period, can only predict the experience of a cohort if age specific survival rates are stable over time. This is clearly not the case in CF. Cohort survival curves of patients with CF in the UK[5] show declining mortality rates in all age groups over almost three decades, as well as an apparent stabilisation of mortality rates in the youngest children in recent years. If long term prognosis in these young survivors is definitively altered, median survival age from current life tables will eventually increase. Current survival curves continue to be useful to describe the shape and evolution of CF mortality in different populations.

More complex analytical methods are needed to explain why some patients still succumb in childhood while others survive into middle age. Proportional hazards regression analysis provides estimates of the relative importance of variables thought to be associated with increased or decreased risk of dying. Not surprisingly, forced expiratory volume in 1 second (FEV_1) has been shown to be the most significant and consistent predictor of mortality risk in CF.[6 7] Sex, age at diagnosis, and measures of nutritional status and airway microbiology were also related to mortality risk, although all but sex were confounded to some degree by their association with FEV_1. In this issue of *Thorax*, Sharma and colleagues[8] focus on the importance of nutritional status, measured as percentage of ideal weight, as an independent predictor of mortality. The authors surmise that the significance of percentage ideal weight in their models, compared with the models of Kerem *et al*,[9] may relate to better overall nutritional status in their patient population so that poor weight better reflects disease progression. However, the patient population studied by Kerem *et al* was well documented as the earliest group of patients with CF to display near normal growth parameters with the modern aggressive approach to nutrition.[10] The more likely explanation for the unique findings in this paper relate to the specific patient group, which is older and displays more advanced disease parameters than those in the previous studies. This clinic based study population may overrepresent patients with CF at later stages in the disease process. Follow up studies at highly specialised clinics like this can define risk variables more precisely and isolate factors and subsets for further study in population based studies. The insidious and lengthy progression of lung disease in CF, and the changing background of diagnosis and treatment practices, make the modelling of CF survival a major challenge. In addition, the proportional hazards estimates do not always translate easily to prospective predictions. It is likely that CF prognosis is affected by different CFTR mutation combinations, the effects of modifier genes, and the interaction of these multiple genetic factors with environmental factors. Diet and dietary interventions may well be the most significant alterable environmental factors in the prognosis of CF.

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The profile of respiratory conditions: why government action is necessary

M R Partridge

In this issue of *Thorax* Haahtela and colleagues describe the Finnish National Asthma Programme.[1] Initiated by the Finnish Ministry of Social Affairs and Health in 1993,[2] the initiative is now two thirds of the way through its programme. In this paper we are treated to an early evaluation of its effectiveness. Some constituents of the programme have an emphasis not seen elsewhere and not always promoted even in guidelines. The Finnish programme has a major emphasis on prevention of asthma, both consideration of the primary prevention of the condition but also the expressed aim of helping those with early asthma to recover. There is also a strong commitment to the concept of self-management of the condition. Underpinning all of these aspects is the desire for action to be evidence based and the evidence for many of the recommendations results from work done in Finland—whether on basic understanding of airway inflammation,[3] the role of the early use of inhaled steroids,[4–6] or on evaluation of the efficacy of self-management.[7 8] As such, the programme represents an almost unique example of the integration of scientific observation, the exploration of hypothesis, clinical trial, and implementation and delivery of care. But does it work and should we all have such a national initiative?

Full evaluation must await completion of the 1994–2004 programme. Intrinsic to a national programme is the lack of a control group and, because many other factors will have changed over a decade, the absolute contribution of this programme may be difficult to discern. Tough targets were set and most have not been fully achieved, but at the halfway point decreased hospital admission rates, decreased time off work, and increased use of inhaled steroids is demonstrated. The programme recognised the need for greater involvement of the non-specialist in the care of those with asthma and, while more patients remain under specialist care than in many other countries, the process of shifting care to the community seems impressive. All districts have nominated one physician to be responsible for implementing the programme, pharmacists are closely involved, specialist nurses trained, and two thirds of districts have launched regional programmes in line with the national programme. What seems to be necessary is for clinicians, scientists, and governments to provide the direction for such a programme at a national level so that it may then cascade through district level to reach the patient. While such a programme could come about in other ways—for example, by coalitions of specialist societies, primary care organisations, and patient support groups—at a time of competing demands a single disease or group of diseases can "miss out" if not placed on the agenda at government level. Indeed, in the UK the All Party Parliamentary Group on Asthma, a group of Members of Parliament with an interest in the condition, recently surveyed all primary care organisations and found that less than 20% had an asthma strategy group or similar, and 39% said they needed the government to develop a national programme for asthma before they could make asthma a local priority (Rt Hon Sir Peter Emery PC, personal communication).

In Australia the government, working with the Australian National Asthma Campaign, has designated asthma as a national health priority area. In its 2001 budget the Australian federal government has allocated 48 million Australian dollars to initiatives over the next 4 years. The components of the package include incentives for GPs, infrastructure support, and a national education awareness campaign targeting both GPs and the community. In the UK it is not just asthma that may have been overlooked. Lung diseases in general do not appear to be attracting national government attention. The UK government has launched admirable initiatives on cancer, coronary heart disease, mental health, and diabetes, and further national service frameworks have recently been announced for the elderly, children, renal services, and long term (mainly neuromuscular) conditions. While lung diseases will feature within some of these other national programmes, the lack of a specific programme devoted to lung diseases is a worrying omission, and the profile of respiratory disease is often not as high as it should be in many other countries. What are the points we should be emphasising to politicians and Departments of Health?

The diversity of lung diseases is often not appreciated by those outside the speciality. Diabetologists look after diabetes and cardiologists spend most of their time looking after coronary artery disease. In contrast, in many countries pulmonologists cover everything from tuberculosis and the pulmonary complications of HIV to asthma and chronic obstructive pulmonary disease (COPD), cystic fibrosis, diffuse interstitial lung disease, lung cancer, sleep apnoea, and many others.

Many of these conditions are increasing in frequency, and many such as tuberculosis, COPD, asbestosis, mesothelioma, and lung cancer are more prevalent in those who are socioeconomically disadvantaged. The lack of a national programme for lung diseases means that the provision of care for those with lung diseases is not uniform. In the UK, where you live will significantly influence your access to a sleep service, a pulmonary rehabilitation programme, specialist asthma nurse, an allergy clinic, or non-invasive ventilatory support.

Why lung diseases do not attract the profile they deserve is harder to ascertain. Heart diseases are emotive, and outcomes for diabetes such as blindness and amputation rates are easier to monitor. Other disorders attract media attention when, for example, care for those with mental illness is inadequate. The very diversity of lung conditions fragments its power base of a cohesive patient lobby, and the fact that some disorders are smoking induced appears to reduce support. Considering their prevalence, respiratory diseases may also be poorly taught in medical schools. This may reduce the profile of these diseases as well as impact upon the quality of care delivered. The realisation that breathlessness may be due to heart disease, pulmonary emboli, diaphragm failure, or systemic disorders such as obesity or anaemia as well as being due to lung disease is not always apparent to all colleagues, and simple use of basic diagnostic tests is often woefully inadequate. While guidelines recommend that the goal of asthma management is normal lung function,[9] 61% of children and 45% of

adults with asthma had never had a lung function test in one large survey.[10] Few hospital physicians would manage cardiac disease without performing an ECG, yet many treat breathlessness due to anything from obesity to pulmonary oedema to fibrosing alveolitis with bronchodilators because they have failed to perform diagnostic spirometric tests.

Specialists in respiratory medicine cannot look after all those suffering from respiratory disease; the profile of the speciality, the way it is taught, and the tools necessary for optimal care must be improved if good care is to be available at community level. As specialists we need to campaign to ensure that national programmes in lung diseases are instituted. As has been shown in Finland, with government backing such programmes can alter the process of care and be associated with improved outcomes, without necessarily being very costly.

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