Is Asthma Mortality Increasing?

Mortality rates for asthma have been increasing slowly but steadily in the US for the past decade. This worrisome problem has been addressed in a number of recent original papers and reviews and in an editorial in this journal. Many explanations have been offered, but the fact is that we are not much closer to understanding this complex issue than we were in 1984 when Sly first reported the increase. Dr. Robin, in this issue (see page 614), focuses our attention on this problem in his inimitable way and challenges us to consider the unpalatable possibility that our management of asthma may be contributing to the increase.

The facts are straightforward. Reported asthma death rates reached a nadir in 1977 and have been inching up since then. This increase has primarily affected the older age group, over age 65. At first glance, this is alarming, especially in view of the fact that death rates from most causes are steadily decreasing and that there is an ever-increasing number of anti-asthma medications available. Moreover, knowledge about the pathophysiology of asthma has increased enormously over the past decade.

The explanation for the facts is not obvious. Dr. Robin considers eight possible explanations: (1) massive undertreatment; (2) changes in the ICD coding; (3) increased prevalence of asthma; (4) improved capability of diagnosis; (5) a shift in the age distribution of incidence; (6) increasing virulence of the condition; (7) increased use of self-medication with over-the-counter drugs; and (8) changes in management since 1977 including the increasing use of polypharmacy. To these should be added changing diagnostic habits of physicians.

Unfortunately, it has proved very difficult to quantitate the role of each of these factors. The problems start with definition. What is asthma? If we cannot define it, how do we gather accurate statistics on prevalence, incidence, and mortality? As Sol Permutt so elegantly put it: "It's like love—we all know what it is, but who would trust anybody else's definition?" In children, especially young children below age five, there is considerable diagnostic overlap between bronchitis, bronchiolitis and asthma. In adults, especially older adults, and in particular in smokers and ex-smokers, the distinction between asthma and COPD is very hard to make and there is likely to be considerable diagnostic overlap.

If diagnostic shifts occur between asthma and other conditions, such as bronchiolitis and COPD, their impact will depend upon the relative frequency of the two conditions in the population. For example, diagnostic shifts between COPD and asthma will have a far greater relative effect on asthma statistics than on COPD statistics, since the prevalence of and mortality from COPD in the older adult greatly exceeds that of asthma. In a recent study of the accuracy of death certification in asthma, Barger et al reviewed the records of all persons who died in hospitals or nursing homes in Oregon in a calendar year, in whom asthma was listed as the cause of death. There were 41 deaths with an age range of 34-90 years and half were smokers or ex-smokers at the time of death. Patients over age 55 frequently had bronchitis, emphysema or COPD, rather than uncomplicated asthma. In only 10 to 30 patients over age 55 was asthma clearly the cause of death, suggesting that reported mortality statistics overestimated the true asthma mortality rate in this age group.

To put the problem of asthma mortality in perspective, it is important to emphasize that death from asthma is still a rare event. For example, in 1985, there were 4,800 asthma deaths in the whole of the US. Moreover, death rates for asthma in the US are among the lowest in developed countries with dependable reporting systems. This raises the question of whether there is widespread underreporting of asthma deaths in the US. It is quite possible, therefore, that there may be fairly extensive false positive and false negative reporting of asthma deaths in the US. More information is needed about this before any credible answer can be given to the question of whether asthma mortality is really increasing in the US.

Meanwhile, this should not detract from the very important question of whether the way we treat asthma now has increased the risk to the patient more than the benefit. We have more anti-asthma medications at our disposal and these medications are thought to be more specific and effective than the range of anti-asthma medications available previously. Specificity and effectiveness do not equate with safety; however, and we must confront the unthinkable that our treatment may increase the risk without a commensurate increase in effectiveness.
Dr. Robin proposes that the problem of increasing asthma mortality be addressed with considerable urgency. This is being done by the Asthma Mortality Task Force, a collaborative project of the American Academy of Allergy and Immunology and the American Thoracic Society. A Workshop was held in November 1986 to bring together epidemiologists, pathologists, pharmacologists, clinicians, and behavioralists from academia, clinical medicine and industry to review the evidence relating to asthma mortality. The proceedings of the Workshop have been published. The Task Force now takes on the much harder job of putting into effect the recommendations of the Workshop, mostly relating to the need for further information in specific areas and for education of health professionals and the lay public.

The important message for the practicing physician is that patients with asthma can die from their disease as well as with their disease. The challenge is to identify the asthmatic at greatest risk. We need to know more before we can do this with accuracy. Meanwhile, we should keep in mind that all asthmatic patients are potentially vulnerable and all anti-asthma medications have some risk. It is also worth remembering that we, as physicians, are responsible for the reliability of mortality statistics.

I would be remiss if I did not emphasize that under-treatment rather than overtreatment has repeatedly been indicted as the probable cause of the "epidemic" of asthma deaths that occurred in the United Kingdom in the 1960s. It is almost certain that this is still the case. Failure of the patient and physician to recognize a deteriorating clinical condition and over-reliance on inhalers creates a potentially fatal scenario. The solution is increased education of health professionals, their patients and the patients' families. A two-pronged attack which includes more research to complete the information base and more education to raise awareness is therefore indicated. As pulmonologists, we have an opportunity and responsibility to take on this task.

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Heart-Lung Transplantation

Since 1981, more than 250 patients have undergone heart-lung transplantation for a variety of indications. The majority of patients have had pulmonary vascular disease either due to primary pulmonary hypertension or congenital heart disease. In this issue of Chest (see page 644) Jones, Higgenbottam, and Wallwork report successful heart-lung transplantation for a patient with cystic fibrosis. The symptomatic and functional improvements have been remarkable, and in up to 16 months of follow-up there has been no sign of the recurrence of lung disease. These results are very encouraging, and are consistent with the presence of relatively normal secretory function in the bronchial epithelium of the transplanted lung. Although the authors point out that follow-up is short, it is probable that there will be no recurrence of the typical cystic fibrosis lung disease in the transplant recipients, and their long-term survival will be similar to other patients with heart-lung transplants in the absence of nonpulmonary complications of their disease.

To help predict the survival of patients receiving heart-lung transplants for cystic fibrosis, it would be helpful to review the experience for other indications. In a recent survey, 19 centers around the world have performed heart-lung transplantation in 255 patients. Approximately 80 percent of the patients had either primary pulmonary hypertension or congenital heart disease. Twenty percent of patients had a variety of illnesses characterized as primarily diffuse lung disease, and several patients received retransplants. The overall one-year survival in these patients has been 60 percent, with a five-year survival of 20 percent. The overall mortality both early and late for patients with primary pulmonary hypertension or congenital heart disease has been 41 percent. For the patients with primary lung disease, the overall mortality is presently 58 percent.

The two longest living patients (the first two patients in the Stanford series) survived, respectively, for five years and two months, dying of unrelated causes and with relatively normal cardiopulmonary histology at autopsy, and five years and 11 months, dying of multisystem failure after staphylococcal pneumonia. The high operative mortality of approximately 25

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