EDITORIAL

Lung volume reduction surgery and the NETT TRIAL

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Compared with the situation a decade or so ago, the treatment of chronic obstructive pulmonary disease, of which emphysema is a component, has progressed considerably, in great part because of a surge in research interest, a better understanding of the disease, and the development of new pharmacological interventions. In this area of health care, as in many if not in all areas, today's medical and surgical communities most often base their practice on what is known as evidence-based medicine. Evidence is derived from clinical research outcomes, and primarily from original clinical trials and systematic reviews of the literature.

The goal of the NETT (1-5) was primarily to assess the safety and efficacy of lung- volume- reduction surgery (LVRS) in comparison with medical therapy in patients with moderate- to- severe emphysema. Efficacy was to be measured by mortality and maximal exercise capacity 2 years after randomization. A number of secondary outcomes were measured, including health- related quality of life. The design required enrollment of 2,500 patients -half assigned to surgical therapy and half to medical therapy. All patients enrolled in either group were stage III or IV of the GOLD classification. These are patients whose life expectancy is generally limited to a few years and who have severe functional limitations. A post- hoc analysis identified four subgroups according to emphysema distribution in the lung and baseline exercise capacity:

- Upper- lobe emphysema and low exercise capacity (UL-LE);
- Upper-lobe emphysema and high exercise capacity (UL-HE);
- Non upper-lobe emphysema and low exercise capacity (NUL-LE);
- Non upper-lobe emphysema and high exercise capacity (NUL-HE).

After medians of 4.3 years follow up, the conclusions are:

1. In the UL-LE subgroup, surgical- therapy patients had a markedly lower death rate than medical therapy patients.
2. These surgical therapy UL-LE patients also experienced greater improvements in maximum work capacity and health related quality of life.

3. The additional 2 years of follow-up established the durability of the LVRS benefit in this subgroup, especially in terms of survival.

The findings also suggest that LVRS should be considered in UL-HE patients. At the end of the median 2.4 years follow-up the death rate among such patients was 16.5% for the surgical- therapy group and 18.3% for the medical- therapy group. After a median 4.3 years follow-up, the death rate was 35.9% for the surgical- therapy group and 42.3% for the medical- therapy group and the surgery group experienced greater functional benefits.

Much more difficult is the question of whether it is "judicious" to transport the evidence of this study to the practice of medicine. The quality of the study and the strength of the statistical evidence weigh in favour of an affirmative judgment, but these considerations must be balanced by other less- positive factors. Though the death rate for the surgical- therapy cohort is much better than for the medical therapy counterparts, it is still high. Furthermore LVRS surgery, including the pre-operative and post- operative care, is quite expensive and this factor is likely to limit the application of LVRS.

Nonetheless, the NETT has established and demonstrated the value of LVRS in specific group of patients suffering from emphysema. It provides an opportunity that may be of significant benefit to selected patients.

References

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