

Respiratory Care and Neuromuscular Disease

Aside from the heart, the respiratory muscles are the only ones in the body that are absolutely necessary for life. It is therefore not surprising to learn that respiratory-muscle dysfunction is the leading cause of morbidity and mortality in those with acute and chronic neuromuscular illness. In this and the next issue of *RESPIRATORY CARE*, we discuss acute and chronic neuromuscular diseases and their effects on the respiratory system.

The crucial nature of the respiratory muscles in their function as a “vital pump” has been known for nearly the past 2,000 years. However, it has been only in the past 100 years or so that devices have been available that can support or even replace the ventilatory function of the respiratory muscles. The development of the iron lung in response to the polio epidemics of the 20th century was a major turning point in the care of individuals with acute and chronic effects of this deadly neuromuscular disease. Respiratory care was essential to the survival and recuperation of individuals with the effects of polio. However, there were several problems with the iron lung and related devices, not the least of which was their size and bulkiness. It was in the 1980s, with the advent of equipment for the treatment of sleep apnea, that a real revolution in the care of individuals with acute and chronic neuromuscular respiratory failure occurred. Comfortable lightweight interfaces that enabled delivery of phasic positive-pressure with portable ventilators allowed for nighttime (and daytime) treatment of the hypoventilation that frequently accompanies neuromuscular diseases.

The articles in this and the following issue of *RESPIRATORY CARE* detail the physiology of some of the major

acute and chronic neuromuscular diseases that are seen in clinical practice. Supportive options for failure of both the ventilatory muscles and the muscles that allow adequate cough function are detailed, and data supporting their use are reviewed. In addition to noninvasive options, the appropriate use of invasive (tracheostomy) ventilation is also discussed. We highlight the crucial role of the respiratory therapist in the support of the individual with neuromuscular disease.

These papers correspond to the presentations at the 37th *RESPIRATORY CARE* Journal Conference, by a multidisciplinary group of pulmonologists, intensivists, anesthesiologists, neurologists, and respiratory therapists. It is unusual to have such a diverse group together in the same room discussing issues related to respiratory failure in patients with neuromuscular disease. The discussions that resulted were lively and the papers produced are superb. Our thanks to the faculty and the American Respiratory Care Foundation for their support of this conference.

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