Lecture 4: Sleep Disordered breathing with history of Polio

Antoine Leotard, Rehabilitation Specialist, France

This was a presentation of research from a French Rehabilitation Specialist who worked in Respiratory Clinic as a Registrar and performed research in this area.

Univariate analysis showed the percentages of Obstructive Sleep Apnoea (OSA) among Polio Survivors as opposed to other people without Polio history that were tested in the Sleep and Respiratory clinic:

- Acute bulbar involvement 13.2% (cf 0%)
- Acute trunk involvement 47.4% (cf 21.9%)
- Persistent bulbar symptoms 10.5% (cf 0%)
- Non-walking patients (18.4% (cf 6.1%)
- Scoliosis 71.1% (cf38.4%)

Under multivariate analysis it was revealed someone with Polio history was 2.72 times more likely to have OSA if they had Scoliosis. The degree of Scoliosis was not defined. It was purely part of the screening form for their referrals from the Physician or Physiotherapist. That is, they were unable to determine if there was an increase in the significance of scoliosis whether this influenced the likelihood of OSA.

I was initially confused as to why the research focused on only OSA and no presentation of central sleep apnoea. Evidently, there had been too little cases of central sleep apnoea to present any information on this from the subjects.

I asked if Dr Leotard thought there were less Bulbar-specific related sleep issues for this population and his response surprised me. The way they diagnose and subsequently prescribe for sleep apnoea is based primarily on meeting the obstructive sleep apnoea criteria. So many of the polio survivors may have an element of central factors but still meet the criteria for OSA. Delineating and identifying the degree of overlap was what the French laboratories were wanting to do, but this required adequate sample sizes.

Similarly, to previous research on fatigue, they found clinically significant sources of disrupted sleep through muscle twitch / restless legs and were interested in working more in a multi-disciplinary approach to address this. This observation highlights the importance of looking not only at sleep hygiene but also pacing skills and the efficacy within this education.

Discussion was presented on the different needs for support with breathing in terms of prescription. The following was discussed:

- Bulbar issues creating decreased upper airway muscle tone
- Trunk/respiratory muscle involvement creating defective upper airway reflexes
- Neuromuscular Scoliosis creating low lung volume (and defective upper airway reflexes)
- Obesity creating impaired upper airway anatomy
- Reduced autonomy creating impaired upper airway anatomy

- Damaged medullary respiratory centre creating respiratory instability

The above points highlighted the risk of nocturnal chronic alveolar hypoventilation among polio survivors and need for specific management, including assessment of musculoskeletal factors with polio history.

Results of Pulmonary Function in OSA PPS subjects

- For those that had 5 or more apnoea's in an hour, expiratory reserve volume was on average 54.1% of expected value
- For those that had less than 5 apnoea's in an hour, expiratory reserve volume was 84.1% of expected value

Overall, this presentation demonstrated the complexity and need of a thorough sleep and respiratory assessment for Polio Survivors. It also reinforced the need to identify a Polio history to clinicians performing assessments to assist in making recommendations and getting prescription correct.