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Commentary

Drug-Induced Sleep Endoscopy for Obstructive Sleep Apnea in Children

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DESCRIPTION

In the United States, children with obstructive sleep apnea (OSA) have a prevalence of 1% to 4%. Daytime somnolence, poor school performance, behavioural and neurocognitive issues, cardiovascular complications, enuresis, growth retardation, and an overall considerably lower quality of life are all possible consequences of pediatric OSA. For otherwise healthy youngsters, adenotonsillar hypertrophy is commonly acknowledged as the most significant factor of OSA. Adenotonsillectomy (AT) is the first-line treatment for pediatric OSA, according to the American Academy of Pediatrics. However, a recent meta-analysis found that 33.7 percent of children with adenotonsillectomy have residual obstructive symptoms. Overnight Polysomnography (PSG) is often considered the next step in evaluation for patients who have persisting obstructive symptoms after adenotonsillectomy. While PSG results are useful in detecting the prevalence and severity of OSA, they don't reveal the exact location or anatomic source of the obstruction. Awake flexible endoscopy can be helpful in detecting anatomic reasons of blockage, such as lingual tonsil hypertrophy and adenoid regrowth; however, these awake exams have not been found to be typical of the patient's airway while asleep. When examining base of tongue collapse, the results of an awake flexible endoscopy did not match those of a similar scope performed while the patient was asleep. When the patient was awake, the patterns of obstruction at the level of the lateral pharyngeal wall were significantly different than when the patient was asleep. With the advancement of induced sleep endoscopy, clinicians can now check anatomical locations that cause airway obstruction only while sleeping.

Croft and Pringle pioneered sleep endoscopy in 1989, and it was further improved in the 1990s. Kezirian and Hohenhorst coined the term Drug-Induced Sleep Endoscopy (DISE) in 2005. The DISE approach includes utilizing a flexible endoscope to examine the upper airway while patients are in a pharmacologically induced sleep-like condition. The nares are used to examine the nasopharynx, oropharynx, larynx, and, in some situations, the trachea with a scope. The procedure has been found to be safe, with moderate-substantial inter-rater reliability and test-retest reliability. The purpose of the DISE exam is to determine which site(s) of obstruction should be surgically targeted for the treatment of pediatric OSA. However, there is still debate on how well DISE resembles physiologic sleep and, as a result, its effectiveness in treating OSA. DISE has always been used to evaluate individuals who have persistent OSA following AT. DISE is now being utilized for select surgically naive individuals, broadening the indications and efficacy of the drug.

The list of indications for the DICE technique has grown: 1. Persistent OSA after adenotonsillectomy, 2. Evaluation for candidacy for hypoglossal nerve stimulator procedure in patients at high risk for persistent obstructive sleep apnea (i.e., obesity, Down syndrome, craniofacial anomalies, neurologic impairment), 3. Significant symptoms of SDB or OSA with small tonsils and adenoids, 4. Occult or sleep-state dependent laryngomalacia, 5. Candidacy for a hypoglossal nerve stimulator procedure is assessed.

DISE requires an anaesthetic that mimics a normal sleep state while allowing for spontaneous respiration. Beyond what occurs in natural sleep, the anaesthetic should not create artificial respiratory depression, cardiovascular effects, or airway collapse. It should be recurrent, with a rapid onset, a short duration, and no significant airway secretions. Most youngsters require an inhalational anaesthetic prior to the placement of an intravenous (IV) line during the DISE process. Topical anaesthetics for the nose channel are avoided since they have been shown to aggravate laryngomalacia symptoms, diminish upper airway reflexes, and impair the arousal response, all of which lead to increased sleep apnea severity.

DISE has a number of benefits, including the ability to gain a three-dimensional picture of the airway while also performing surgery in the same operating setting. The potential of DISE to assist the surgical therapy of juvenile patients with SDB and OSA is beneficial. Its effectiveness has been demonstrated in patients with OSA who have already received AT as well as in surgically naive patients. DISE requires a widely agreed upon anaesthetic regimen and scoring system in the field of pediatric sleep surgery.

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