

Autoinflation as a Treatment of Secretory Otitis Media

A Randomized Controlled Study

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• This study was undertaken to evaluate the effect of a new method of autoinflation as an alternative treatment of secretory otitis media. Up to 80% of all children experience one or more episodes of eustachian tube dysfunction and secretory otitis media before school age. Common treatment of this condition is insertion of a ventilation tube in the tympanic membrane. Because of the very high incidence of secretory otitis media in childhood, insertion of ventilation tubes is the most frequently performed operation under general anesthesia in children. In addition to possible anesthetic complications, insertion of ventilation tubes may be associated with purulent suppuration, pathologic findings in the eardrum, and hearing impairment. One hundred children were consecutively randomized to undergo either autoinflation, using a new device, or placed in a control group. The children were between 3 and 10 years of age and were entered into the study after having had secretory otitis media for at least 3 months, as verified by tympanometric findings. Tympanometry was repeated at 2 weeks and at 1, 2, and 3 months after the children were entered into the study. After 2 weeks of autoinflation, the tympanometric conditions were improved in 64% of ears, unchanged in 34%, and deteriorated in the remaining 2%. In the control group, tympanometric findings were improved in 15% of ears, unchanged in 71%, and deteriorated in the remaining 14%.

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Epidemiologic studies have shown that up to 80% of all children have episodes of eustachian tube dysfunction and secretory otitis media of varying duration before attaining school age.¹ In addition to causing reduced hearing and various eardrum changes,² secretory otitis media predisposes to acute middle ear infection.³ Some investigators even claim that all chronic middle ear diseases occurring later in life, such as chronic otitis media and cholesteatoma, are directly attributable to secretory otitis media in childhood.⁴ Owing to the great variability of the spontaneous course of secretory otitis media, it has been common policy to observe the child and post-

pone treatment until the condition has persisted for at least 3 months. The following forms of treatment are available: sustained antibiotic treatment⁵; adenoidectomy; paracentesis; polsterization; and, finally, the most common and, perhaps, most effective, insertion of a ventilation tube in the eardrum.⁶ The latter procedure is usually performed under general anesthesia and is, in fact, the most frequent reason for general anesthesia in children. Because of the high extrusion rate of the ventilation tubes, many children undergo the procedure several times. In addition to the possible complications of anesthesia, insertion of ventilation tubes may have the following adverse effects: purulent discharge of varying duration⁷; development of eardrum changes, such as atyrugosclerosis⁸; and permanent eardrum perforation.⁹ Throughout the ages, various methods have been used for inflation of the middle ear,¹⁰ but, since the pioneering work of Politzer in 1869,¹¹ the Valsalva maneuver and passive inflation (the Politzer test) have been the prevailing methods.

The present study was undertaken to determine whether it was possible to teach children a new method of autoinflation using a specially designed tube designed to improve their middle ear ventilation and, thereby, reducing the need for insertion of ventilation tubes.

SUBJECTS AND METHODS

From June to December 1988, 100 children were included in the study. The inclusion criteria included unilateral or bilateral secretory otitis media for at least 3 months as verified by tympanometry (performed at visits 1 and 2), and the child's age needed to be between 3 and 10 years. The age limits had been established in a pilot study showing that some children younger than 3 years of age had difficulties performing autoinflation, whereas all children at or older than 3 years of age were able to perform the task.

The patients were randomized to either a group performing autoinflation for 2 weeks or to a group being observed without treatment for 2 weeks. Otomicroscopy and tympanometry were performed after 2 weeks (at visit 3), after 1 month (visit 4), after 2 months (visit 5), and after 3 months (visit 6). The children's medical history for the year preceding the study was reviewed and special emphasis was placed on the following conditions: prior otitis media, acute otitis media, adenoidectomy, paracentesis, grommet insertion, and antibiotic treatment. At each visit, the anamnesis for the preceding period was recorded, especially with regard to acute otitis media and antibiotic treatment.

Autoinflation was performed using a tube designed by one of the authors (S.E.S.) (Fig 1). One end of the tube is sealed tightly

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