Comparison of Efficiency and Compliance of Old and New Devices for Autoinflation in Children

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Introduction

Autoinflation is a technique whereby the Eustachian tube is opened for middle ear ventilation by raising of the upper airway pressure. Compliance and efficiency have been the major problems for autoinflation in young children. The objective of the present study was to compare a new device for autoinflation, Moniri®, to the most acknowledged device of autoinflation, Otovent®.

Material & Methods

112 children, aged 2-5 years were recruited at a nursery school. The number of children in the Otovent®, Moniri® and the control groups were 37, 37 and 38 respectively. Tympanometry and otoscopy were performed at inclusion and after autoinflation or 20 min (control group). The Otovent® device consists of a balloon and a tube adapted to one nostril. While the opposite nostril and the mouth are closed the balloon is inflated. The Moniri® device consists of a pump, covered by a frog, connected to a T-tube communicating with a balloon and a mask to cover the nose and mouth. The child may inflate the balloon by nose or mouth autonomously. The pump in the frog may by used to assist the child. The same balloon opening pressure (60 cmH2O) was used in both devices. Successful middle ear ventilation was defined as an alteration ≥ 50 daPa from the baseline pressure.

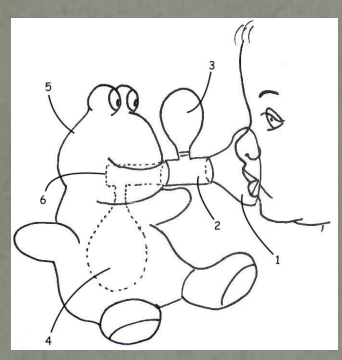

Fig. 1 ***The Moniri® Device***
1. Facemask 2.T-tube 3.Balloon 4.Pump 5.Plush frog 6.Security valve

Fig. 2 ***The Otovent ® Device***
Tube and Balloon

Results

Baseline tympanometry indicated middle ear effusion in 24 ears (32%) in the Otovent® compared to 28 ears (38%) in the Moniri® group (p=0.41). After instructions, 19 children (51%) were willing to use the Otovent® device whereby two (5%) managed to inflate the balloon, compared to 33 (89%) and 32 (86%) in the Moniri® group (p<0.01). Successful middle ear ventilation was achieved in ten ears (14%) in the Otovent® group compared to 54 ears (73%) in the Moniri® group (p<0.01). No significant alteration was observed in the control group.

	Otovent®	Moniri®
Total	37	37
Baseline Effusion	24(32)	28(38)
Voluntary Use	19(51)	33(89)*
Inflation of Balloon	2 (5)	32(86)*
Middle Ear Ventilation	10 (14)	54(73)*

Table Comparison of the groups
()= %; *= p<0.01.

Conclusions

Autoinflation was achieved in 73% of the ears in the Moniri® group compared to 14% in the Otovent® group. This study indicates that the Moniri® device has overcome the previous difficulties in performance of autoinflation with excellent compliance and efficiency in young children.

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