



Brazilian Journal of  
OTORHINOLARYNGOLOGY

www.bjorl.org



ORIGINAL ARTICLE

**Pulmonary hypertension evaluation by Doppler echocardiogram in children and adolescents with mouth breathing syndrome** ☆,☆☆

**Q2** Marcela Silva Lima<sup>a,\*</sup>, Carolina Maria Fontes Ferreira Nader<sup>b,c</sup>,  
Letícia Paiva Franco<sup>d,e</sup>, Zilda Maria Alves Meira<sup>f</sup>, Flavio Diniz Capanema<sup>g</sup>,  
Roberto Eustáquio Santos Guimarães<sup>h</sup>, Helena Maria Gonçalves Becker<sup>h,i</sup>

<sup>a</sup> Department of Surgery and Ophthalmology, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil

<sup>Q3</sup> <sup>b</sup> Faculdade de Saúde e Ecologia Humana (FASEH), Vespasiano, MG, Brazil

<sup>c</sup> Programa Institucional de Bolsas de Iniciação Científica e Tecnológica (PROBIC), Fundação de Amparo a Pesquisa do Estado de Minas Gerais (FAPEMIG), Faculdade de Saúde e Ecologia Humana (FASEH), Vespasiano, MG, Brazil

<sup>d</sup> Hospital das Clínicas, Universidade Federal de Minas Gerais (HC-UFMG), Belo Horizonte, MG, Brazil

<sup>e</sup> Faculdade de Medicina, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil

<sup>f</sup> Department of Pediatrics, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil

<sup>g</sup> Núcleo de Inovação Tecnológica, Fundação Hospitalar do Estado de Minas Gerais (FHEMIG), Santa Efigênia, MG, Brazil

<sup>h</sup> Department of Ophthalmology, Otorhinolaryngology and Speech Therapy and Audiology, Faculdade de Medicina, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil

<sup>i</sup> Centro Multidisciplinar de Atenção ao Respirador Oral, Hospital das Clínicas, Universidade Federal de Minas Gerais (HC-UFMG), Belo Horizonte, MG, Brazil

Received 7 January 2016; accepted 31 March 2016

**KEYWORDS**

**Q4** Mouth breathing;  
Tonsillectomy;  
Adenoidectomy;  
Pulmonary hypertension;  
Child;  
**Q5** Doppler

**Abstract**

*Introduction:* Adenotonsillar hyperplasia (ATH) and allergic rhinitis (AR) are the most common causes of upper airway obstruction in children. Such diseases, by affecting the upper airways, can cause chronic alveolar hypoventilation, pulmonary vasoconstriction and pulmonary hypertension, which in some cases, are irreversible.

*Objective:* This cross-sectional study aimed to evaluate the prevalence of pulmonary hypertension in two groups of mouth-breathing (MB) 2–12 year old children with ATH and isolated allergic rhinitis, through Doppler echocardiography.

☆ Please cite this article as: Lima MS, Nader CM, Franco LP, Meira ZM, Capanema FD, Guimarães RE, et al. Pulmonary hypertension evaluation by Doppler echocardiogram in children and adolescents with mouth breathing syndrome. Braz J Otorhinolaryngol. 2016. <http://dx.doi.org/10.1016/j.bjorl.2016.03.020>

☆☆ Study carried out at Hospital São Geraldo, Hospital das Clínicas, Faculdade de Medicina, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil.

\* Corresponding author.

E-mail: [marcelasl03@yahoo.com.br](mailto:marcelasl03@yahoo.com.br) (M.S. Lima).

<http://dx.doi.org/10.1016/j.bjorl.2016.03.020>

1808-8694/© 2016 Published by Elsevier Editora Ltda. on behalf of Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

32 echocardiography;  
33 Rhinitis  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48

**Methods:** 54 patients with ATH and indications for adenoidectomy and/or tonsillectomy and 24 patients with persistent allergic rhinitis were selected and submitted to Doppler echocardiography. The Systolic Pulmonary Artery Pressure (SPAP) was determined by tricuspid regurgitation and the Mean Pulmonary Artery Pressure (MPAP) was calculated from the SPAP. Similar measurements were carried out in 25 nasal breathing (NB) individuals.

**Results:** The mean MPAP and SPAP were higher in the MB than in the NB group ( $17.62 \pm 2.06$  [ATH] and  $17.45 \pm 1.25$  [AR] vs.  $15.20 \pm 2.36$  [NB] mmHg,  $p < 0.005$ , and  $25.61 \pm 3.38$  [ATH] and  $25.33 \pm 2.06$  [AR] vs.  $21.64 \pm 3.87$  [NB] mmHg,  $p < 0.005$ , respectively) and the mean acceleration time of pulmonary flow trace (Act) was higher in the NB than in the MB group ( $127.24 \pm 12.81$  [RN] vs.  $114.06 \pm 10.63$  ms [ATH] and  $117.96 \pm 10.28$  [AR] MS [AR];  $p < 0.0001$ ).

**Conclusion:** None of the MB children (ATH and AR) met the PH criteria, although individuals with both ATH and isolated AR showed significant evidence of increased pulmonary artery pressure by Doppler echocardiography in relation to NB individuals. No differences were observed between the ATH and AR groups.

© 2016 Published by Elsevier Editora Ltda. on behalf of Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

49 **PALAVRAS-CHAVE**

50 Respiração bucal;  
51 Tonsilectomia;  
52 Adenoidectomia;  
53 Hipertensão  
54 pulmonar;  
55 Criança;  
56 Ecocardiografia  
57 Doppler;  
58 Rinite

**Avaliação de hipertensão pulmonar pela Ecodopplercardiografia em crianças e adolescentes com síndrome do respirador oral**

**Resumo**

**Introdução:** A Hiperplasia Adenotonsilar (HAT) e a Rinite Alérgica (RA) consistem nas causas mais comuns de obstrução de vias aéreas superiores em crianças. Tais afecções ao comprometer a via aérea superiores podem ocasionar hipoventilação alveolar crônica, vasoconstrição pulmonar e hipertensão pulmonar, em alguns casos, irreversível.

**Objetivo:** este estudo transversal objetivou avaliar a prevalência de hipertensão arterial pulmonar em dois grupos de crianças Respiradoras Oraís (RO): com HAT e rinite alérgica isolada, de 2 a 12 anos de idade, por meio de exame ecodopplercardiográfico.

**Método:** 54 pacientes com HAT com indicação de adenoidectomia e/ou tonsilectomia e 24 pacientes com rinite alérgica persistente foram selecionados e submetidos à ecodopplercardiografia. A Pressão Sistólica da Artéria Pulmonar (PSAP) foi determinada pela regurgitação tricúspide e a Pressão Média da Artéria Pulmonar (PMAP) foi calculada a partir da PSAP. Determinações similares foram realizadas em 25 Respiradores Nasais (RN).

**Resultados:** as médias da PMAP e da PSAP foram maiores nos grupos de RO do que nos RN ( $17,62 \pm 2,06$  [HAT] e  $17,45 \pm 1,25$  [RA] vs.  $15,20 \pm 2,36$  [RN] mmHg;  $p < 0,005$ ; e  $25,61 \pm 3,38$  [HAT] e  $25,33 \pm 2,06$  [RA] vs.  $21,64 \pm 3,87$  [RN] mmHg;  $p < 0,005$ ; respectivamente) e a média do tempo de aceleração do traçado do fluxo pulmonar (TAC) foi maior nos RN que nos grupos de RO ( $127,24 \pm 12,81$  [RN] vs.  $114,06 \pm 10,63$  ms [HAT] e  $117,96 \pm 10,28$  [RA] MS [RA];  $p < 0,0001$ ).

**Conclusão:** Nenhuma criança respiradora oral (HAT e RA) preencheu os critérios de HP embora tanto os portadores de HAT quanto de RA isolada apresentaram evidências significativas de aumento da pressão arterial pulmonar pela ecodopplercardiografia em relação aos respiradores nasais. Não se observou diferença entre os grupos HAT e RA.

© 2016 Publicado por Elsevier Editora Ltda. em nome de Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. Este é um artigo Open Access sob uma licença CC BY (<http://creativecommons.org/licenses/by/4.0/>).

77 **Introduction**

78 Mouth breathing syndrome (MBS) refers to the clinical  
79 condition in which the individual has a breathing pattern  
80 performed predominantly through the oral cavity for a  
81 period longer than six months.<sup>1,2</sup> Among the etiologies,  
82 allergic rhinitis is the most common cause of chronic  
83 upper airway obstruction (UAO),<sup>3</sup> accounting for up to  
84 85% of cases. The hypertrophy of adenoids and/or tonsils

85 corresponds to 79.2%, being the main cause of Obstructive  
86 Sleep Apnea (OSA) in children.<sup>1,4-9</sup>

87 Chronic nasal obstruction and the consequent OBS result  
88 in an insufficient supply of oxygen and alveolar ventila-  
89 tion during the night, causing hypoventilation, hypoxemia  
90 and hypercapnia that can lead to OSA and pulmonary  
91 vasoconstriction, which, if persistent, results in pulmonary  
92 hypertension (PH).<sup>6-14</sup> PH in children is defined as Mean  
93 Pulmonary Artery Pressure (MPAP)  $\geq 25$  mmHg or Systolic

Download English Version:

<https://daneshyari.com/en/article/5714016>

Download Persian Version:

<https://daneshyari.com/article/5714016>

[Daneshyari.com](https://daneshyari.com)