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Title: Acoustic analysis of respiratory sounds in infants with wheezing

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Body: The aim of the study was to determine functional acoustic characteristics of breath by bronchophonographic method (BPG) in infants with wheezing. Methods: We observed 24 children (2 month-3 years) with wheezing. The patients were divided into two groups (Gr), the Gr1 (n=14) - atopic children and Gr2 (n=10) - non-atopic children. The control group (C) included 27 healthy non-atopic children (2 month - 3 years of age). Computerized BPG by computer diagnostic complex «Pattern» (MEI, Russia) (0,2-12,6 kHz) before and after inhalation of salbutamol (BTS) was provided all patients after the disappearance of wheezing. It were used coefficients of the general acoustic breath work (ABW) – ϕ_1 (0,2-1,2 kHz), ϕ_2 (1,2-5,0 kHz), ϕ_3 (5,0-12,6 kHz), representing relation of level ABW in a given frequency range of the level general ABW. Results. There were significantly more high parameters of general ABW, ϕ_2 , ϕ_3 in the patients of Gr1 and Gr2 in comparison with Gr3 ($p<0,05$). Patients of Gr1 showed more high general ABW then Gr2 ($p_{1-2}<0,01$). The patients of Gr1 and Gr2 also showed the most high amplitude of sounds in high frequency zone (5,0-12,6 kHz) in comparison with Gr3 ($p<0,05$). After BTS for the most part of children of the Gr1 (2/3) and 1/2 of the Gr2 showed significant decreasing ϕ_3 ; the level of ϕ_3 in the Gr1 decreased significantly more in comparison with Gr2 (accordingly $64,4\pm 7,7\%$; $40,0\pm 10,3\%$; $p<0,05$). Conclusion: These preliminary results showed that the infants after the disappearance of wheezing still demonstrate the significant functional acoustic disorders. It was more expressed at atopic children then non-atopic. It can be important in relation of early debut of bronchial asthma.