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Are crackles age dependent?

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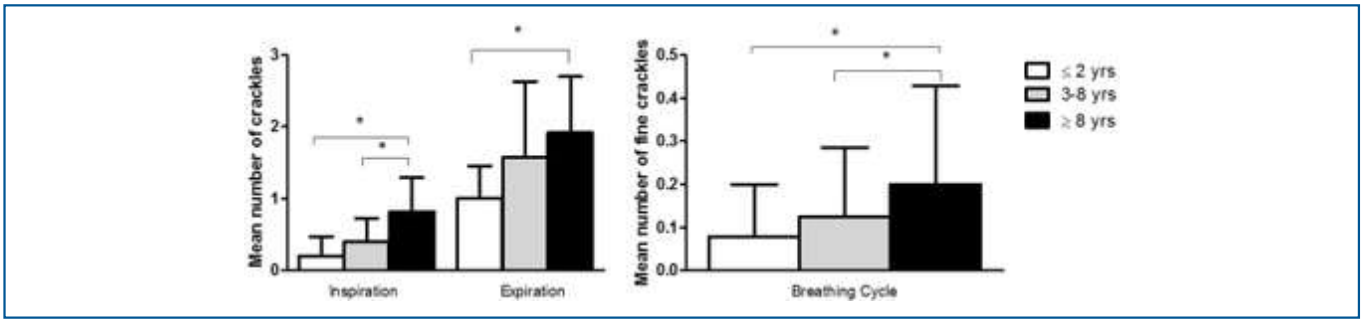
Abstract

Normal lung sounds in healthy people vary according to lung development, and thus its interpretation depends on age. Currently, adventitious lung sounds, such as crackles (Cr), have been reported in healthy people (Oliveira et al. Resp. Med. 2014; (108)550e570). However, it is not known if their characteristics also depend on lung development. This study assessed Cr characteristics in healthy children at different age-ranges.

59 children (20 aged ≤2yrs; 18 aged 3-8yrs and 21 aged >8yrs) were recruited during routine appointments. Respiratory sounds were recorded with a digital stethoscope at posterior left and right chest. Computerised analysis was used to characterise number and type of Cr per breathing cycle. Data are shown as median.

Children aged >8 had more inspiratory (0.8 vs. 0.4) Cr than those aged 3-8 and more inspiratory (0.8 vs. 0.3) and expiratory (1.9 vs. 1.0) Cr than children aged ≤2. Also, children aged >8 (0.2) had more fine crackles per breathing cycle than younger children (≤2 and 3-8: 0.1). (Fig. 1).



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Differences in number of Cr are volume related. Cr are only generated if sufficient volume of air is achieved to open closed airways. Younger children have little pulmonary tissue and high respiratory rates and thus the smaller volume of air inhaled/exhaled may explain the lower number of Cr. This study highlights the need of considering age when interpreting children's auscultation. Further research in healthy and diseased populations is needed.

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