Pneumomediastinum as first manifestation of asthma

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We report the clinical cases of three male children, two aged 6 and the other 9 years old. None had a known previous history of respiratory or allergic disease.

Clinical presentation in all was with dry cough for one to two days, associated with chest pain in two cases and dyspnea in the other.

Physical examination at the emergency service showed polypnea and lung auscultation was positive for increased expiratory time and bilateral wheezing in all 3 patients. Hypoxaemia (peripheral oxygen saturation ≤ 92%) was noticed in two and only in one subcutaneous cervical emphysema was detected. A chest radiograph was performed in all the 3 patients which were diagnostic for pneumomediastinum and subcutaneous emphysema (Figs. 1 and 2). All patients were hospitalized and treatment consisted of oxygen therapy, analgesia, rest, avoiding manoeuvres that would increase intra-abdominal pressure, inhaled bronchodilators and systemic corticosteroids. Clinical evolution was favourable and the patients were discharged between the third and sixth day. All patients were referred to outpatient paediatric respiratory clinic and in all allergen sensitivity was diagnosed. Spirometry with bronchodilation test revealed bronchial and bronchiolar obstruction with a positive bronchodilation test in two of the cases (Fig. 3). The acute episode of pneumomedistinum was the inaugural manifestation for the diagnosis of asthma in all three cases.

Spontaneous pneumomediastinum is a rare situation in the paediatric population and the most frequent cause is asthma.[1-3] The literature emphasizes the occurrence of under-diagnosis in children and there are few descriptions of cases with this association.[1-4] An episode of spontaneous pneumomediastinum should imply a structured clinical history with a high degree of suspicion for an exacerbation of asthma, because in addition to the conservative treatment, an appropriate treatment of the cause is needed.[1-3] With a safety interval, at least spirometry with bronchodilatation test should be carried out.[1,4,5] We emphasize that in cases of exacerbation of asthma with intense chest pain or dysphonia, subcutaneous emphysema should be investigated and chest radiograph performed to exclude pneumomediastinum.[3,4]

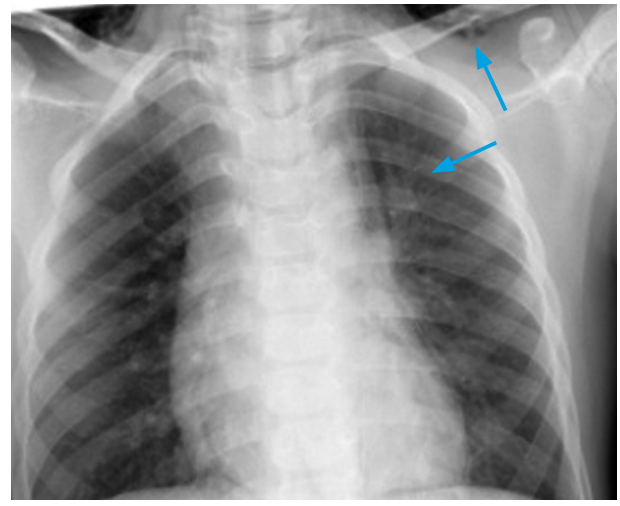

Figure 1. Chest X-Ray with pneumomediastinum and subcutaneous emphysema (arrows).

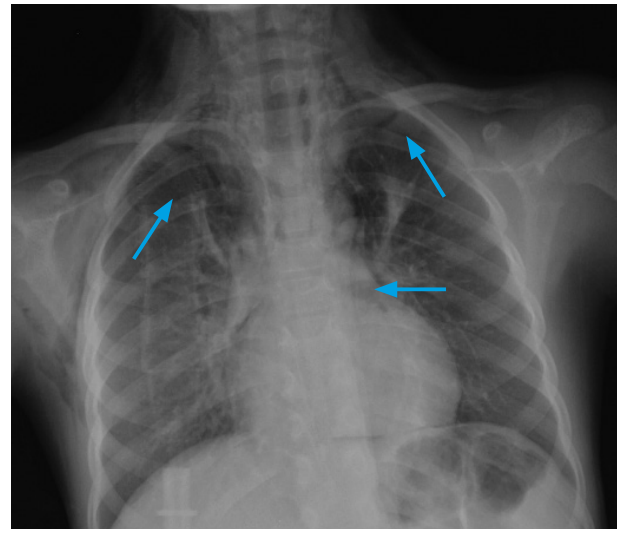

Figure 2. Chest X-Ray with pneumomediastinum and subcutaneous emphysema (arrows).

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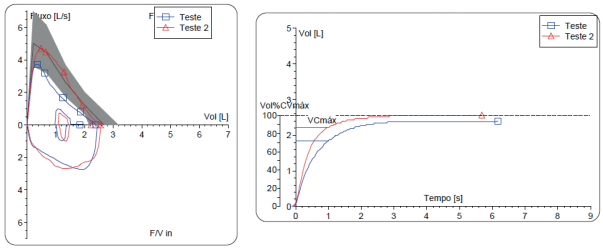

BODY PLETHYSMOGRAPHY AND FLOW-VOLUME CURVE

Figure 3. Basal flow-volume curve with obstructive pattern. Forced expiratory volume in one second (FEV1) 80.6%; ratio between the forced expiratory volume in one second and forced vital capacity (FEV1/FVC) 75.12; positive bronchodilatation test (ΔFEV1 21.2%).

Keywords: Asthma/diagnosis; Child; Mediastinal Emphysema/complications; Mediastinal Emphysema/diagnosis; Pneumothorax/complications; Pneumothorax/diagnosis

WHAT THIS REPORT ADDS

- Spontaneous pneumomediastinum is a rare situation, under-diagnosed in the emergency service.
- Children with an episode of spontaneous pneumomediastinum should be referred, after discharge, for specialized clinic, and after a safety interval, perform at least spirometry and bronchodilation test.
- Chest pain, dyspnea and dysphonia in a child, without a previous history of chest trauma, requires the diagnosis work-up for the existence of cervical and chest emphysema and after resolution the reference to an asthma clinic.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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Protection of human and animal subjects

The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

References

1. Chen C, Tseng C, Hsu JH, Wu JR, Dai ZK. Spontaneous pneumomediastinum in adolescents and children. Kaohsiung J Med Sci 2010;2:84-8.
2. Saadoon AA, Janahi IA. Spontaneous pneumomediastinum in children and adolescents [accessed 8 January 2018]. Available at: http://www.uptodate.com
3. Gasser CR, Pellaton R, Rochat CP. Pediatric spontaneous pneumomediastinum: Narrative literature review. Pediatr Emerg Care 2017;33:370-4. doi: 10.1097/PEC.0000000000000625.
4. Porpodis K, Zarogoulidis P, Spyratos D, Domvri K, Kiousmis I, Angelis N, et al. Pneumothorax and asthma. J Thorac Dis 2014;6:S152-6. doi: 10.3978/j.issn.2072-1439.2014.03.05.
5. Chiu C, Wong KS, Yao TC, Huang JL. Asthmatic versus non-asthmatic spontaneous pneumomediastinum in children. Asian Pac J Allergy Immunol 2005; 23:19-22.