

Pneumomediastinum in Diabetic Ketoacidosis: A case report

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Abstract

Pneumomediastinum (PM) is the presence of air within the mediastinum. It is a rare illness that affects 1 in 33,000 people in the general population, according to reports. It is a rare complication of diabetic ketoacidosis (DKA). We report a case of pneumomediastinum complicating an inaugural diabetic ketoacidosis.

Keywords: Diabetic ketoacidosis; Diagnosis; Pneumomediastinum; Hyperventilation

1. Introduction

A 27-year-old patient with no personal history was hospitalized for inaugural diabetic ketoacidosis.

The symptomatology associated epigastralgia, vomiting and dyspnea, aggravated by the installation of a coma.

Clinical examination found a Glasgow score of 13/15, blood pressure of 140/80 mmHg, tachycardia of 118 beats/min and polypnea of 25 breaths/min.

In addition, minimal anterior cervical subcutaneous emphysema was noted without inflammatory symptoms.

A chest x-ray showed bilateral cervical subcutaneous emphysema and a continuous diaphragm sign consistent with pneumomediastinum. Based on this finding, an emergency nasofibroscopy was performed, revealing no abnormalities.

The thoracic computed tomography (CT) scan showed subcutaneous emphysema at the cervical level, a pneumomediastinum of medium abundance involving the 3 floors, a pneumopericardium and a left pneumothorax blade.

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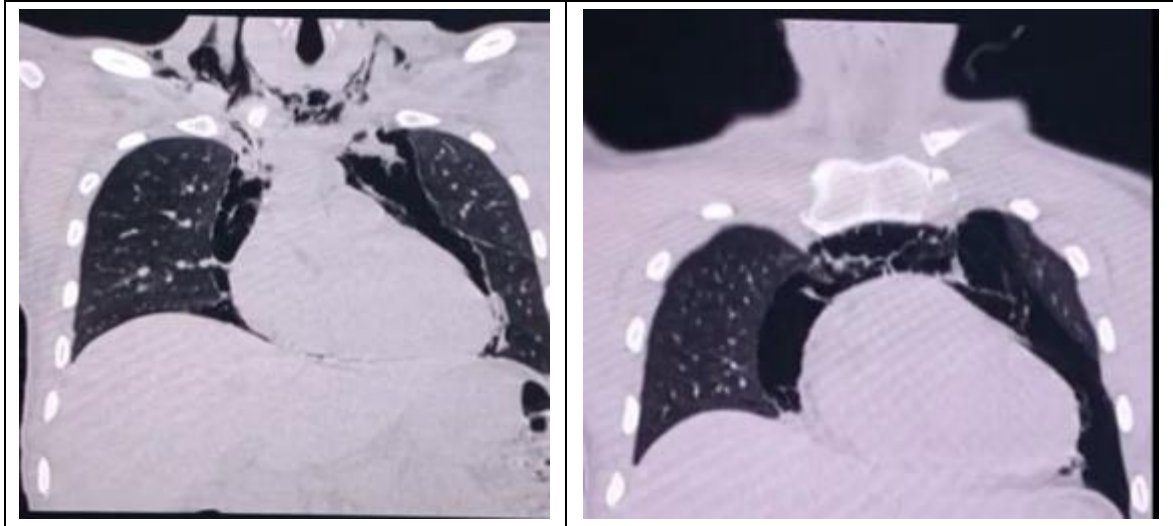


Figure 1 thoracic computed tomography: The cardiac silhouette is surrounded by mediastinal hyperclarity, which suggests a pneumo mediastinum

The patient was placed on rest with rehydration, insulin therapy with an electric syringe, and antibiotic therapy. The evolution was marked by clinical and paraclinical improvement. The subcutaneous emphysema resolved within 72 h and a new chest X-ray revealed marked improvement of his pneumomediastinum after 5 days.

2. Discussion

Pneumomediastinum is a rare and known complication of diabetic ketoacidosis [1,3,5]. Its incidence is not known [2]. One of the first cases reported in the literature was described in 1937 [8]. To date, more than 79 cases of pneumomediastinum occurring during diabetic ketoacidosis have been reported in the literature [4]. Pneumomediastinum most commonly results from alveolar rupture, which can occur in a variety of clinical situations that produce intrathoracic hyperpressure: asthma attack, dry cough, lung infections, vomiting, chest trauma, and inhaled drug use [6]. In diabetic ketoacidosis, hyperventilation (Kussmaul's dyspnea) [3,9] and repeated vomiting increase intra-alveolar pressure leading to alveolar rupture. Air is dissected along the peribronchovascular sheath into the mediastinum. From the mediastinum, the air may occupy the retroperitoneum, the pericardial sac or the epidural space, the fascial planes of the neck causing subcutaneous emphysema as in our patient. Rarely, the mediastinal pleura may rupture, resulting in pneumothorax. Subcutaneous emphysema is present in 88% of cases [1]. Chest pain is also a common sign and may be associated with dyspnea. Pneumomediastinum is most often detected by chest radiography.

Thoracic computed tomography is more sensitive than chest radiography. It provides more opportunity to identify additional cases of pneumomediastinum associated with acidotic decompensation [1]. Latero-mediastinal hyperclarity surrounding the cardiac silhouette is suggestive of pneumomediastinum. The evolution is often favorable, with resolution usually spontaneous, its regression usually follows the correction of the acidosis [3,7, 10]. Pneumopericardium is a serious complication to be recognized: it can lead to tamponade, thus increasing the risk of mortality [7].

3. Conclusion

Pneumomediastinum is due to hyperventilation induced by acidosis or uncontrollable vomiting. It is a rare complication. Its diagnosis is radiological. Its prognosis is good, with rapid regression in parallel with the correction of ketoacidosis. There remains a risk of recurrence during episodes of ketoacidosis decompensation.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

I declare no conflict of interest

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Pooyan P, Puruckherr M, Summers JA. Pneumomediastinum, pneumopericardium, and epidural pneumatosis in DKA. *J diabetes complications* 2004 ; 18(4) : 242–247.
- [2] Bouaziz H, Charfi N, Kaffel N, Mnif M, Abid M. Rare complication of diabetic acidoketosis: the pneumomediastinum. *Rev Pneumol Clin.* 2007 Oct;63(5 Pt 1):327-30.
- [3] Younis N, Austin MJ, Casson IF. A respiratory complication of diabetic ketoacidosis. *Postgrad Med J* 1999; 75:753-4.
- [4] Zhang W, Chen J, Wu X, Chen L, Wei J, Xue M, Liang Q. Analysing the Clinical Features of Pneumomediastinum Associated with Diabetic Ketoacidosis in 79 Cases. *Diabetes Metab Syndr Obes.* 2020 Feb 17; 13:405-412. doi: 10.2147/DMSO.S230799. PMID: 32110073; PMCID: PMC7034958.
- [5] Grieve NW, Bird DR, Collyer AJ, Meredith GA. Pneumomediastinum and diabetic hyperpnoea. *Br Med J* 1969; 4:186.
- [6] Kouritas VK, Papagiannopoulos K, Lazaridis G, et al. Pneumomediastinum. *J Thorac Dis.* 2015 ; 7(Suppl 1): S44–49. doi:10.3978/j. issn.2072-1439.2015.01.11
- [7] LinksLevsky JM, Feuer BH, Di Vito J Jr. Pneumomediastinum in a patient with diabetic ketoacidosis. *J Emerg Med* 2004 ; 26: 233–235.
- [8] Hamman I. Spontaneous mediastinal emphysema. *BuH Johns Hopkins* 1939; 64:1-21.
- [9] Macklin MT, Macklin GC. Malignant interstitial emphysema of the lungs and mediastinum as an important occult complication in many respiratory diseases and other conditions: on interpretation of the clinical literature in light of laboratory experiment. *Medicine* 1944; 231:281-358.
- [10] Bullaboy CA, Jr Jennings RB, Johnson DH, et al. Radiological case of the month. Pneumomediastinum and subcutaneous emphysema caused by diabetic hyperpnea. *Am J Dis Child* 1989; 143:93-4.