

# Asthma discovered accidentally and subcutaneous emphysema associated with a spontaneous mediastinum pneumonitis in shisha smoker: about one case

## Abstract

Pneumomediastinum or mediastinal emphysema is a rare condition (1 case out of 7,000 to 12,000 admissions to the hospital) and poorly known which affects especially young healthy long-haired men. The causes are many, there seems to be no factor favoring actually identified even if certain series report a certain number of asthmatic patients for whom it can be a mode of disclosure of the disease. The shisha or Hookah is a water pipe whose phenomenon has become worrying and a fashion its last 5 years in Niger. We report a case of an 18-year-old patient with no personal and family history of asthma and no other personal medical and surgical history. However he was occasional tobacco to 1 year package weaned 8 months ago in favor of shisha smoke which he found more enjoyable than cigarettes. The patient had consulted in pulmonology for dysphagia, cough with purulent expectoration, dyspnea in exertion, chest pain, clear rhinorrhea and sneezing evolving for 4 days in a febrile context. Previously Mr MMI had been consulted by a general practitioner who had pre-scribed Penicillin V and Ibuprofen. The diagnosis of asthma of fortuitous discovery and subcutaneous emphysema associated with a spontaneous pneumomediastinum in a shisha smoker was done. The evolution was favorable in one week with apyrexia, absence of functional signs, complete disappearance of subcutaneous emphysema and standardization of the face X-ray screened at 7 days later.

**Keywords:** pneumomediastinum, asthma, chicha, niamey

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## Introduction

Pneumocontrolled mediastinum is a rare disease (1 case out of 7,000 to 12,000 hospital admissions), poorly understood and many causes.<sup>1,2</sup> For a decade shisha or hookah has become a fashion phenomenon on a large scale, its consumption has taken on a worrying scale and is designated as a veritable “epidemic” worldwide.<sup>3,4</sup> We report here a case of asthma of accidental discovery and subcutaneous emphysema associated with a mediastinum pneumonia in a shisha smoker.

## Observation

Mr MMI 18 years old high school student, does not have a personal and family history of asthma or any personal medical and surgical history. However he is occasional tobacco to 1 year package weaned 8 months ago to benefit the shisha smoke he found was more enjoyable than cigarette smoking. The patient consults in pneumology for dysphagia, cough with purulent expectoration, dyspnea, chest pain, clear rhinorrhea and sneezing evolving for 4 days in a febrile context. Aupa-ravant Mr MMI had been consulted by a general practitioner who had prescribed Penicillin V and Ibuprofen, which he had taken for 3 days without any improvement, hence his consultation in pulmonology for better care. The general examination finds a weight: 54kg, height: 171cm, BMI: 18.5kg/m<sup>2</sup>, RT: 120/60mm Hg, FR: 20 cycles/minute, Heart rate: 90 beats/minute, temperature: 39°C, saturation in am-biant air: 97%.

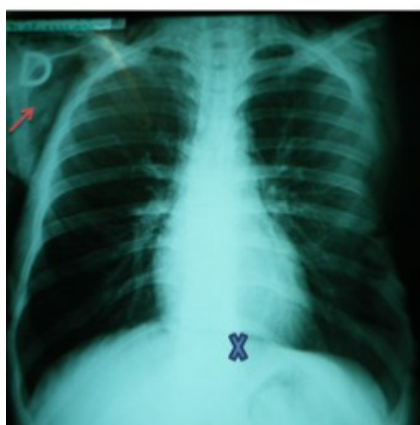
Physiological examination of a longline chest, sibilant rales, and bilateral crepitis with swelling of the neck, supra clavicular troughs,

and thorax, the palpation of which provoked snowy scratches suggestive of subcutaneous emphysema.

## Results

The chest x-ray of the face objectively a subcutaneous emphysema with a distended lung and a mediastinum pneumo (Figure 1); the sinus radiograph reveals bilateral maxillary sinusitis. NFS showed no hyperleucocytosis or anemia, SV was accelerated to 75 mm at the first hour, AFB negative cracats, thoracic CT had re-discovered a mediastinum pneumonia associated with a subcutaneous emphysema of the moles (Figure 2&3). The spirometry performed 35 days later showed a mild reversible obstructive syndrome after the broncho dilatation test. The diagnostic hypothesis of asthma of fortuitous discovery following a subcutaneous emphysema and pneumonia mediastinum on rhino sinusitis was retained.

The treatment received by Mr MMI was based on nebulization (Terbutaline) morning and evening for 4 days, Amoxicillin+Clavulanic acid (1g×3/day for 10 days), chlorhexidine/Lidocaine (1 spraying in the throat×3/day for 3 days), Fluticasone (1 spray in each na-rine×2/day for 15 days, Cetirizine 10 mg (1 tablet at night), Betamethasone2mg single after meal for 7 days), Fluticasone+salmeterol 500µg (1 beef every 12 for 3 months). The development was favorable in one week under the treatment mentioned above and rest with apyrexia, absence of functional signs, a complete disappearance of subcutaneous emphysema and normalization of the pulmonary X-ray of the face controlled at 7 days later (Figure 4).



**Figure 1** Objective for subcutaneous emphysema (□) and a mediastinum pneumo (X).



**Figure 2** Thoracic CT showing subcutaneous emphysema (□) and the mediastinum pneumo (X).



**Figure 3** Thoracic CT showing subcutaneous emphysema (□) and the mediastinum pneumo (X).



**Figure 4** Pulmonary x-ray of the face checked 7 days later showing the disappearance of subcutaneous emphysema and mediastinum pneumonia.

## Discussion

The spontaneous mediastinum pneumonia (PMS) is a rare and poorly known affliction which mainly strikes young, long and healthy men.<sup>5</sup> The pathophysiological mechanisms of PMS are poorly defined and the hypothesis most often reported in the literature is that of endobronchial hypertropression with closed glottis. This hyperpressure would be responsible for alveolar rupture near the vascular septas, the latter draining the arterial effusion thus created towards the mediastinum.<sup>6,7</sup>

Persistent cough is present in 50% of the patients and one cervical gene in 1/3 of cases<sup>8</sup>. Dyspnea and dysphagia are more rare, the key examination of the diagnosis is subcutaneous emphysema. Hamman's sign (dry crackling sound at the auscultation of the precordial area predominant especially during systole, but also during the diastole) is noted on the careful auscultation of the precordial area 1 times out of 2<sup>1</sup>. The natural evolution of spontaneous pneumo-spontaneous pneumonitis is to cure in 2 to 4 days with complete disappearance of clinical and ra-diological signs. No specific therapy (antibiotherapy, oxygen therapy) seems to have proved effective, recurrences are rare, complications are exceptional.<sup>9</sup>

Our patient is a shisha consumer, Hookah smokers compared to non-smokers, have very high levels of free radicals, greater production of superoxide anion, more leukocytes, high plasma levels of prostaglandin 8-epi-PGF<sub>2</sub>, a more pronounced oxidative stress in regular hookah smokers. These changes can lead to lung lesions and ventilatory deficits.<sup>10,12</sup> The shisha smoker presents with spirometry: a distal obstructive ventilatory defect, a static pulmonary distension and an acceleration of the pulmonary aging.<sup>13</sup> This pulmonary aging has been confirmed by several authors.<sup>14,15</sup> Knowing that asthma is a cause of the mediastinum pneumo, we ask ourselves the following question: Shisha would not be a risk factor or other cause of the mediastinum pneumo?

## Conclusion

Spontaneous mediastinum pneumonia is a rare and benign pathology often difficult to diagnose. In Niger, special attention must be paid to the growing consumption of chicha by young people, hence the need to fight against this global scourge and to carry out studies in order to make the link between chicha and mediastinum pneumo but also with other pathologies.

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## Conflicts of interest

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