

Pneumomediastinum during the Fourth Stage of Labor

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Key Words

Pneumomediastinum · Hamman's syndrome · Postpartum complication

Abstract

Postpartum spontaneous pneumomediastinum (Hamman's syndrome) is a very rare event with an estimated incidence of 1 in 100,000 deliveries. It occurs mainly in the second stage of labor and is potentially lethal. We report the case of a 29-year-old primiparous woman during the immediate puerperium (Leff's fourth stage of labor) presenting with acute chest pain, dyspnea and petechiae. She was admitted to the intensive care unit with a suspected diagnosis of amniotic fluid embolism. A chest radiograph revealed a pneumomediastinum that finally resolved with oxygen therapy and supportive management in 3 days.

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Introduction

Postpartum spontaneous pneumomediastinum (Hamman's syndrome) is a very rare event with an estimated incidence of 1 in 100,000 deliveries. It occurs mainly during the second stage of labor and is potential-

ly lethal. We report here the case of a primigravida who developed chest pain, dyspnea and petechiae 1 h after delivery, during the Leff's fourth stage of labor, due to a pneumomediastinum that presented the same clinical features of an amniotic fluid embolism.

Case Report

A 29-year-old nulliparous woman presented at the hospital in her 39th week of gestation in established labor. She was a non-smoker with no history of drug abuse and her medical and surgical history was unremarkable. Her pregnancy was uneventful. The first and second stages of labor coursed without incidence for a total duration of 6 h. After pushing for 65 min, a healthy male infant weighing 2,680 g was delivered. The Apgar scores were 8 and 9 at 1 and 5 min, respectively. The third stage of labor was completed, normally, 20 min later. During the fourth stage (immediate postpartum), 75 min after delivery, she began complaining of shortness of breath and chest pain. Dyspnea and chest petechiae (fig. 1) were noted.

She was admitted to the intensive care unit with a suspected diagnosis of amniotic fluid embolism. Clinical examination revealed a mild crepitation in the anterior neck region. She had an oxygen saturation of 97% on room air and her blood pressure and pulse were normal. The electrocardiogram was within normal limits. The chest radiograph showed a pneumomediastinum with intense subcutaneous emphysema (fig. 2).

The patient was observed closely and kept under continuous cardiac monitoring receiving oxygen supplementation. After 4



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Fig. 1. Small chest and shoulder petechiae.

days of conservative management, she was nearly symptom-free, as manifested by a decrease in pneumomediastinum size and confined subcutaneous emphysema that appeared not to be extending. The patient was discharged from the hospital in 6 days. She underwent a medical revision by the respiratory physicians 5 days later and has remained asymptomatic ever since.

Conclusion

Hamman's syndrome has been reported as a complication of labor in approximately 200 cases over the last two centuries [1]. Typically, pneumomediastinum encompasses substernal pain, subcutaneous emphysema, obliteration of heart sounds or cardiac dullness, crepitant sound over the heart synchronous with heart beat (Hamman's sign), evidence of increased mediastinal pressure (dyspnea, cyanosis, engorged veins and possible circulatory failure), pneumothorax and roentgenographic evidence if air is present in the mediastinum [2].

The causal mechanism of Hamman's syndrome is still debatable, though it seems to occur mainly in the second stage of labor in healthy primiparous women with prolonged labor and large babies [1]. In this case, pneumomediastinum developed in the fourth stage of labor (immediate postpartum), which is extremely uncommon, without a prolonged labor and a baby weighing only 2,680 g. In addition, the pushing time was not too long; as described in the guidelines of our hospital and the Spanish Society of Obstetrics and Gynecology, 120 min is considered the normal upper limit for a primiparous

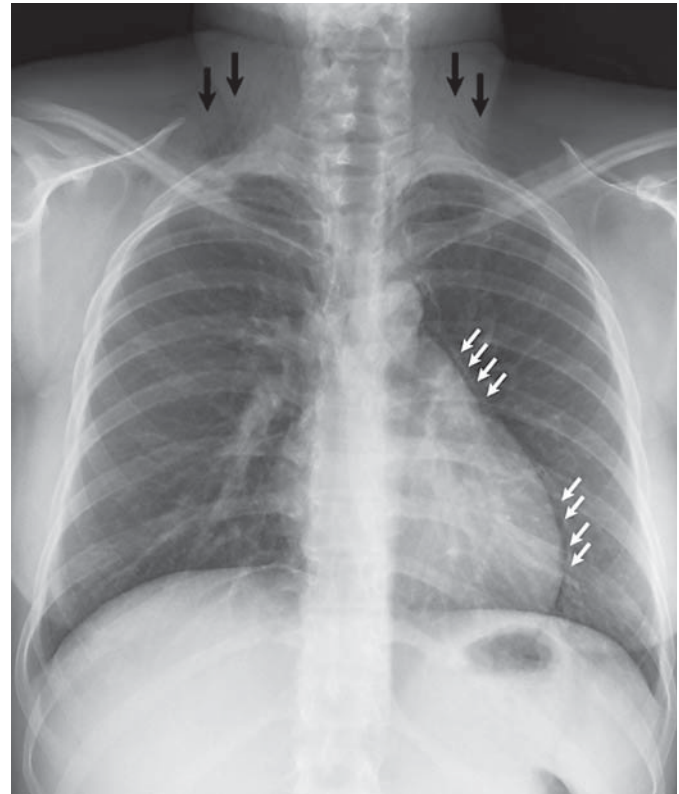


Fig. 2. Chest radiograph showing the pneumomediastinum (white arrows) and subcutaneous emphysema (black arrows).

woman and this fact can be found in other papers where the pushing time was within the normal range [1, 3]. There are likely other causes added to the mechanism of the Valsalva maneuvers generated during parturition; for example, the previous presence of pulmonary bullae, which can be broken during labor, may be leading to subcutaneous emphysema, pneumomediastinum and, in 30% of the cases [1], pneumothorax.

The presence of subcutaneous emphysema or a Hamman's sign is virtually diagnostic of pneumomediastinum, although the diagnosis is ultimately confirmed by a chest X-ray. Identification of the syndrome is important because potential complications can be severe. In our case, the presence of chest pain and dyspnea without any previous history of pulmonary or heart disease made us look for an etiology related to the labor. Because of it, the differential diagnosis is crucial and included cardiac tamponade, angina pectoris, pericarditis, dissecting aneurysm, mediastinitis, esophageal tear and pulmonary embolism [2]. The presence of petechiae in this patient compelled us to make the differential diagnosis with am-

niotic fluid embolism, which has a higher mortality of the possible complications. The chest radiograph showed us the cause of the symptoms, but it is essential to pay attention to common signs of pneumomediastinum such as dyspnea, cyanosis, chest pain or subcutaneous emphysema. The petechiae were probably caused by small capillary ruptures incurring due to the pushing efforts, in spite of the relatively short time the patient did them.

In the absence of a pneumothorax, the pneumomediastinum usually runs a benign course and responds well to conservative management. In our case, the patient was treated with reassurance, oxygen supplementation (which accelerates the resorption of air) and analgesia [4]. Pneumomediastinum usually resolves within 2 weeks and recurrence in subsequent pregnancies is uncommon.

References

- 1 Norzilawati MN, Shuhaila A, Zainui-Rashid MR: Postpartum pneumomediastinum. Singapore Med J 2007;48:174–176
- 2 Miguil M, Chekairi A: Pneumomediastinum and pneumothorax associated with labour. Int J Obstet Anesth 2004;13:117–119.
- 3 Majer S, Graber P: Postpartum pneumomediastinum (Hamman's syndrome). CMAJ 2007;177:32.
- 4 Bonin MM: Hamman's syndrome (spontaneous pneumomediastinum) in a parturient: a case report. J Obstet Gynaecol Can 2006; 28:128–131.