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Hamman's syndrome during labour – case report
Sindrome de Hamman's durante o trabalho de parto – relato de caso

Margarida Gonzalez,[1] Ana Sofia Ramos,[1] Joana Cominho,[1] Dulcina Lopes,[1] Filomena Nunes[1]
Hospital de Cascais Dr. José de Almeida

Abstract

Hamman's syndrome is mainly characterized by the presence of mediastinal emphysema, which is the accumulation of air in the mediastinal space. This syndrome can manifest itself in women during or after childbirth. Although rare, is a medical condition that can arise in specific contexts, including the perinatal period. In the last century, there have been around 200 reported cases of Hamman's syndrome during labor. We describe a case of a full-term, low-risk, nulliparous pregnant woman, aged 21 years, who presented with edema of the right face side with associated subcutaneous emphysema, after expulsive efforts to attempt a vaginal birth.

Keywords: Hamman's syndrome; Labour; Mediastinal emphysema.

Resumo

O síndrome de Hamman's é caracterizado principalmente pela presença de enfisema mediastínico. Este síndrome pode-se manifestar em mulheres durante ou após o parto. Embora raro, é uma condição médica que pode surgir em contextos específicos, incluindo o período perinatal. No último século, houve cerca de 200 casos relatados de síndrome de Hamman's durante o trabalho de parto. Descrevemos o caso de uma gestante de termo, de baixo risco, nulípara, de 21 anos, que apresentou um quadro com edema facial do lado direito associado a com enfisema subcutâneo, após esforços expulsivos numa tentativa de parto vaginal.

Palavras-chave: Síndrome de Hamman; Trabalho de parto; Enfisema mediastínico.

INTRODUCTION

Hamman syndrome was initially described in 1939 by Paul Hamman, who observed the relationship between chest trauma and the presence of air in the mediastinum. In the context of childbirth, the syndrome can be triggered by trauma related to labor, such as obstetric maneuvers (like for example maneuvers for shoulder dystocia), or by episodes of intense coughing and straining during expulsion. Additionally, the presence of pre-existing medical conditions, such as asthma or chronic lung disease, may increase the predisposition to develop this syndrome. This syndrome is a rare complication of the second stage of labor with an incidence of 1 in 100,000 births. It appears to be more common in young nulliparous women[1,2,3].

Despite presenting with a rather exuberant clinical examination, most cases are self-limited. The most common symptom is chest pain and less frequently patients may experience dyspnea, cough or palpitations.

1. Hospital de Cascais Dr. José de Almeida, Alcabideche, Portugal.

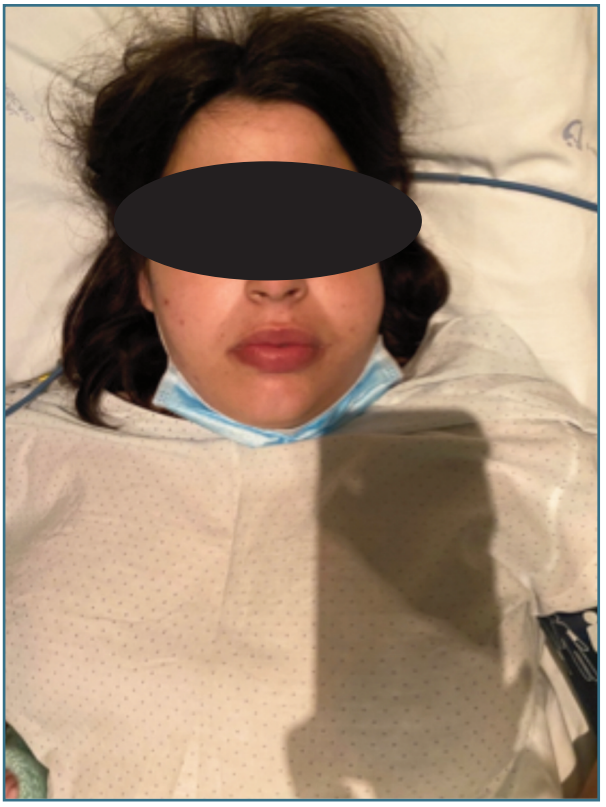

FIGURE 1. Patient at the imediate post-partum.

There are several etiological hypothesis described, but the most common is excessive Valsava maneuvers. The pathophysiological mechanism involves diffusion of the air in the alveoli through the connective tissue and then through the subcutaneous cellular tissue, resulting in emphysema. The diagnosis can be confirmed by chest X-ray or cervical and thoracic computed tomography scan[2,7,8].

Although the condition is self-limited in most cases, the presence of air in the mediastinum can lead to secondary complications such as pneumothorax or mediastinitis, which can affect both the mother and the fetus/ newborn. This syndrome may have implications for the newborn when there is some complication in addition to the pneumothorax or if it causes maternal hemodynamic instability, which in turn affects fetal well-being. Management may include careful monitoring, respiratory support and, in more severe cases, surgical intervention to drain accumulated air. Educating pregnant women about the signs to watch out for after giving birth can be an important preventive strategy[1,2,8].

In this case, we describe a case of Hamman Syndrome in a full-term, low-risk, nulliparous pregnant woman, aged 21, with no significant personal or obstetric history, after expulsive efforts to attempt a vaginal birth. The patient gave her consent to the publication of the case, signing an informed consent.

CASE REPORT

We present the case of a pregnant, Caucasian, nulliparous woman, aged 21, with no relevant personal or family history. The patient came to our emergency department due to premature rupture of membranes, at 40 weeks and 6 days. It was a low-risk pregnancy that had been monitored at the primary health care center.

Three hours after admission, the pregnant woman was 3 cm dilated, and had significant contraction's pain, so she underwent epidural analgesia.

Labor progressed naturally and as expected, reached complete dilation eleven hours after the premature rupture of membranes.

During the expulsive efforts, the sudden occurrence of edema of the right side of the face was detected. Upon observation, a marked and important crepitus in the same area stands out, without other edema, particularly of the tongue or neck. She also denied difficulty swallowing or difficulty breathing.

The expulsive efforts were immediately suspended and an urgent cesarean section was performed, without complications, with the birth of a male newborn, weighing 3045 g, with an Apgar Index of 10/10/10.

On objective examination no changes were found except palpation of the crepitation zone on the right side of the face. The patient was hemodynamically stable and without changes on cardio-pulmonary auscultation. (Figure 1)

In the early postpartum period, a cranioencephalic and cervical CT scan (Figure 2) was performed, which revealed the existence of extensive subcutaneous emphysema in the planes of the muscle-adipose band throughout the epicranial and cervical segments with pneumomediastinum but without gas densities within the spinal canal.

For this reason, she was admitted to the Intensive

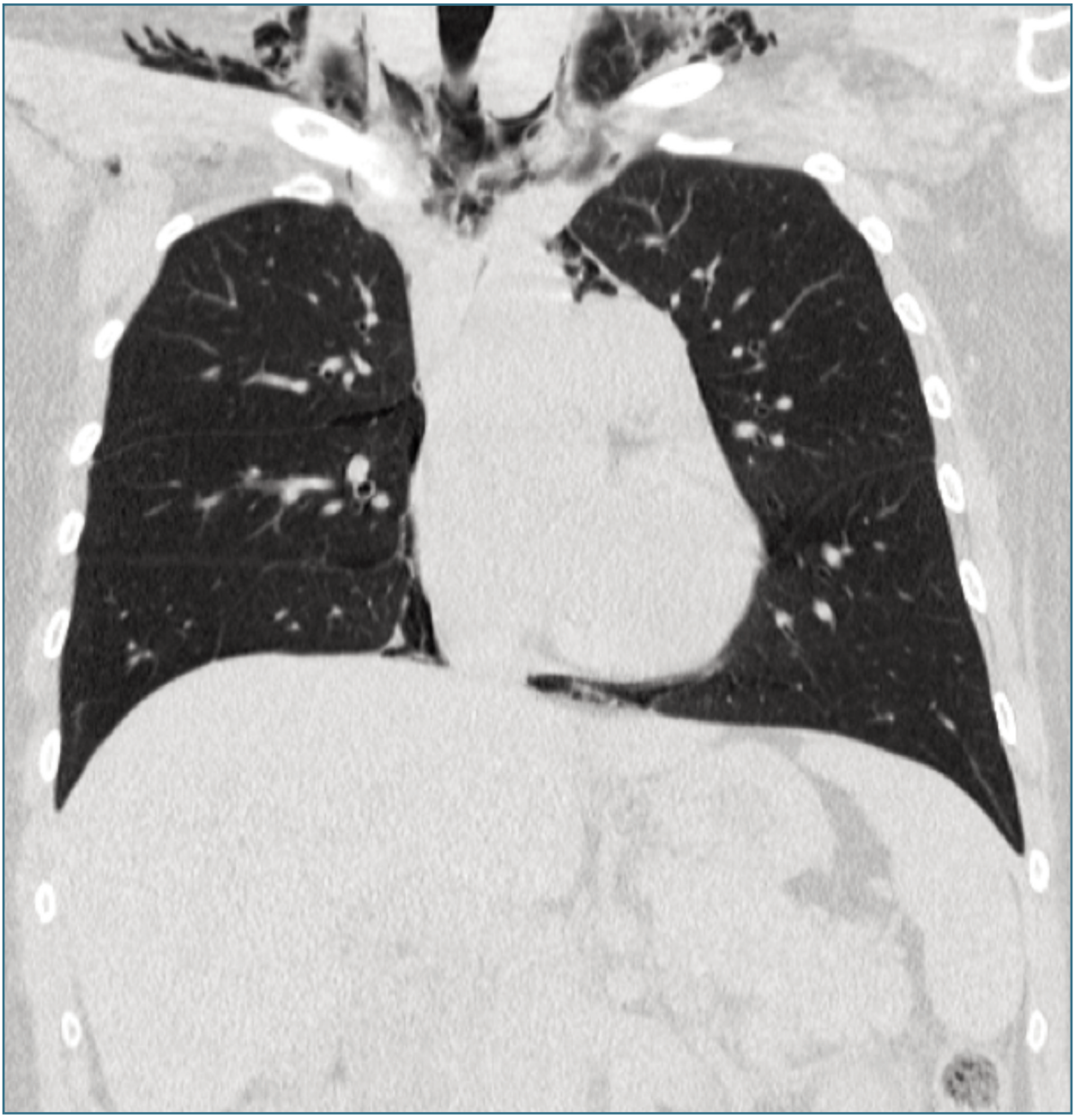

FIGURE 2. Post partum CT scan: presence of areas of subcutaneous emphysema is observed throughout the chest, particularly in the cervical and thoracic region. These areas have reduced density, suggesting the presence of air in the subcutaneous space. There are no signs of associated liquid collections in the affected areas.

Unit Care for close surveillance, where she remained for 24 hours, after which she was transferred to the normal post-partum nursery.

She spent 4 days at the hospital and by the time of discharge she was hemodynamically stable, still with slight crepitus on the neck and with a chest X-ray (Figure 3) that revealed a clear reduction in emphysema compared to the previous exam.

At one year follow-up she was healthy and asymptomatic.

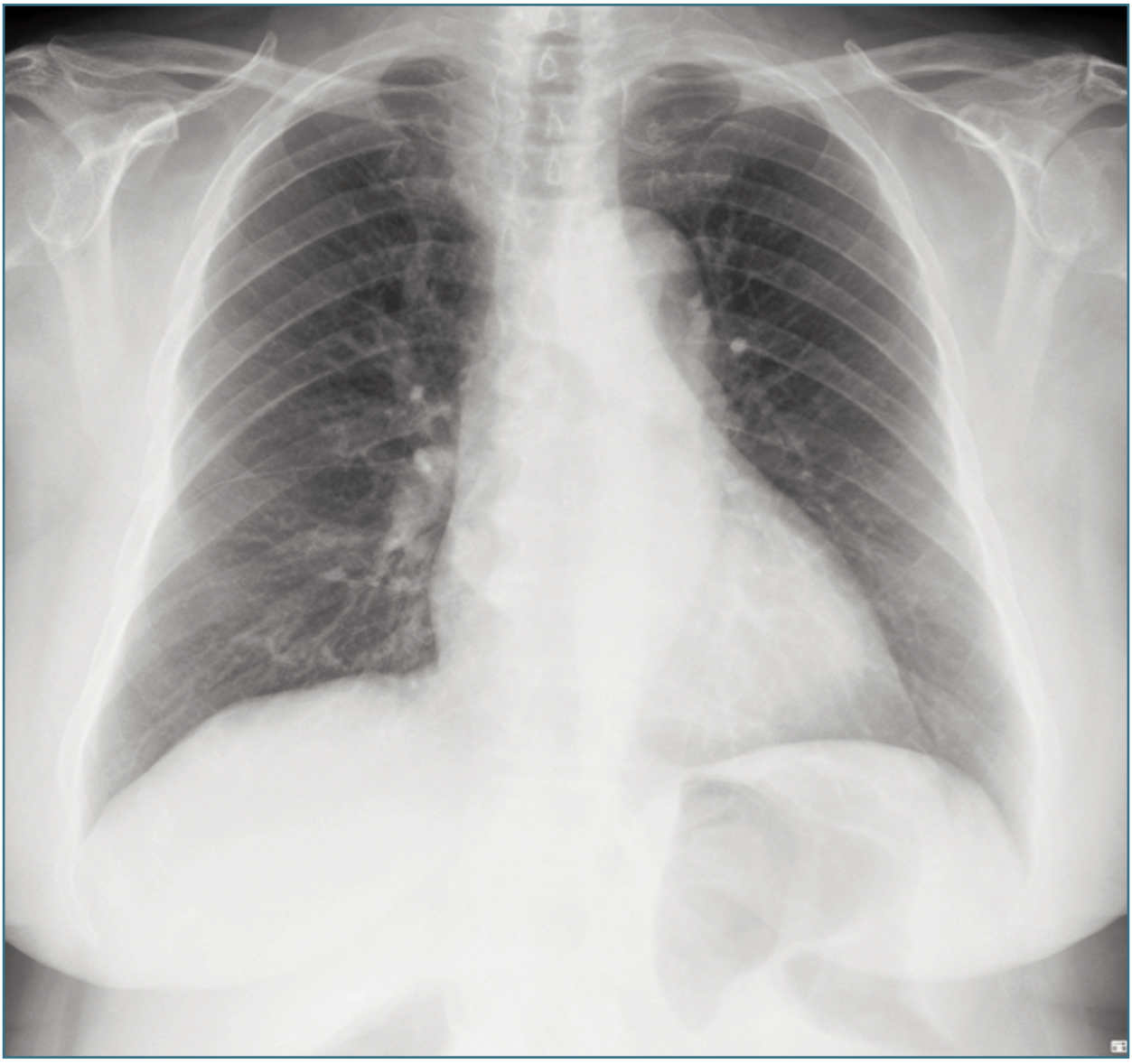

FIGURE 3. Chest X-ray 48 hours after de diagnosis, where no areas of subcutaneous emphysema or other anomalies in the mediastinal areas are observed.

DISCUSSION

Hamman's syndrome is a rare complication that can affect pregnant women in the second stage of labor. In the vast majority of cases, the pressure created by expulsive efforts increases intrathoracic pressure by around 50 mmHg. This excess of intra-alveolar pressure causes it to rupture, releasing air into the perivascular spaces, causing pneumomediastinum. There are other etiologies for this syndrome, such as esophageal rupture, bronchospasm in asthmatic patients or chest infection[1,2,4].

On objective examination, palpation of crepitus and edema are highly suggestive of pneumomediastinum. Chest pain, dyspnea, voice changes, cough and tachycardia may also occur[4,5,6].

For diagnosis, chest X-ray and chest and cervical CT scans are most frequently used. In most cases it is not associated with pneumothorax, as was the case with our patient. As a general rule, it is a self-limited

syndrome, with conservative treatment and a good prognosis[1,2,8].

In our case, despite fetal well-being being assured, it was considered that the maternal pathology at the time would be indicative for an urgent cesarean section as there could be a possibility of hemodynamic instability given the pneumotorax that was suspected at the time of delivery.

At the time of discharge, the most important thing is to teach the warning signs, especially breathing difficulties or the reappearance of emphysema in the head or neck. Follow-up is not consensual among the various authors, but the majority state that it should be reevaluated with a chest X-ray within 48 hours after birth and then between 4-6 weeks after birth, with the decision being made individually from then on[3,4,5,6,7,8].

In the case of our patient, the clinical evaluation and objective examination were very important, which first raised suspicion of cervical emphysema. The timely diagnosis and the work of several multidisciplinary teams allowed for a quick start and closer monitoring of the case[4,5,6,7,8].

As described in the literature, our patient's case was also self-limited and no type of medical intervention was necessary. Only monitoring and surveillance was carried out and the patient was discharged after recovering from her clinical condition.

CONCLUSION

Hamman's syndrome is a condition that, despite its rarity, represents a significant challenge in the context of childbirth. Early recognition and appropriate management are essential to minimize risks to both mother and baby. With increasing awareness of this syndrome among health professionals, it is expected that its identification and treatment will become more efficient, thus promoting better perinatal outcomes. Continued research into the risk factors and management of this condition is critical to ensure women's safety during and after childbirth.

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AUTHOR CONTRIBUTIONS

Joana Cominho and Ana Sofia Ramos has contributed substantially to the collection of data, writing of the manuscript and final approval of the version to be published. Dulcina Lopes and Filomena Nunes have contributed substantially to the critical review of the manuscript and final approval of the version to be published.

CONFLICT OF INTEREST

The authors declare to have no conflict of interest.

CORRESPONDENCE TO:

Margarida Gonzalez
E-mail: mariamargaridagonzalez@gmail.com
https://orcid.org/0009-0003-9965-3801

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