

Intrapartum pneumomediastinum associated with subcutaneous emphysema

Denis K. Dudley, MD, FRCSC
Donald E. Patten, MD, CCFP, FCFP

Maternal pneumomediastinum associated with subcutaneous emphysema is a rare complication of pregnancy, the incidence rate being between 1 in 100 000 and 1 in 2000 deliveries.¹ Pneumomediastinum occurs most frequently in the second stage of labour and may be overlooked as a possible cause of peripartum chest pain, dyspnea, cyanosis and hypotension.

Case report

A 25-year-old woman was admitted to hospital in labour in the 42nd week of her first pregnancy. Left-sided periorbital swelling developed 40 minutes into the second stage of labour. An hour and a half later a low forceps delivery was performed under pudendal block anesthesia with 1% lidocaine. The infant had an Apgar score of 9/9 and weighed 3710 g.

An immediate postpartum hemorrhage of about 900 ml occurred because of uterine atony; the mother's blood pressure fell to 90/50 mm Hg. After intravenous administration of oxytocin and infusion of 1 L of lactated Ringer's solution her blood pressure returned to 120/80 mm Hg and her pulse to 80 beats/min. The midline episiotomy was repaired shortly afterward.

Twenty-three minutes after the delivery the woman complained of chest pain and difficulty

breathing. The oxytocin infusion was stopped, and oxygen was administered. Her blood pressure was 190/70 mm Hg and her pulse rate 84 beats/min. An electrocardiogram (ECG) showed normal sinus rhythm, and the arterial blood gas values were also normal.

Thirty-six minutes after the delivery crepitus of the right arm and the chest wall was observed. The periorbital swelling was now bilateral. The diagnosis of pneumomediastinum and subcutaneous emphysema was confirmed by means of radiography (Figs. 1 and 2). The patient remained stable and was transferred to the postpartum ward 3 hours after delivery.

The next day a chest x-ray film confirmed the previous findings. A Gastrografin (diatrizoate meglumine and diatrizoate sodium) swallow demonstrated an intact esophagus. The patient remained asymptomatic and was discharged 3 days later.

Comments

The differential diagnosis of pneumomediastinum includes conditions that may require immediate treatment, such as pulmonary embolism, amniotic fluid embolism, myocardial infarction, pneumothorax, toxic effects of intravascular injection or absorption of local anesthetic agents, and dissecting aortic aneurysm. If pneumomediastinum is considered, the demonstration of free air on chest x-ray films will confirm the diagnosis and rule out the other conditions; thus, the need for more aggressive and invasive measures will be avoided.

Pneumomediastinum associated with subcutaneous emphysema during pregnancy was described by Hamman² in 1945. However, Gordon³ reviewed 130 cases of pneumomediastinum during pregnancy in 1927 and found that this clinical entity was first referred to in 1618 by Louise

From the departments of Obstetrics and Gynecology and of Family Medicine, Ottawa Civic Hospital, University of Ottawa

Dr. Dudley is director of the High-Risk Pregnancy Unit, Ottawa Civic Hospital, and assistant professor in the Department of Obstetrics and Gynecology, University of Ottawa; Dr. Patten is chief of the Department of General Practice, Ottawa Civic Hospital, and assistant professor in the Department of Family Medicine, University of Ottawa.

Reprint requests to: Dr. Denis K. Dudley, 306-1095 Carling Ave., Ottawa, Ont. K1Y 4P6

Bourgeois, midwife to the Queen of France. In 1784 Simon reported the first case of pneumomediastinum complicating pregnancy.³ Approximately 200 cases have since been reported.¹

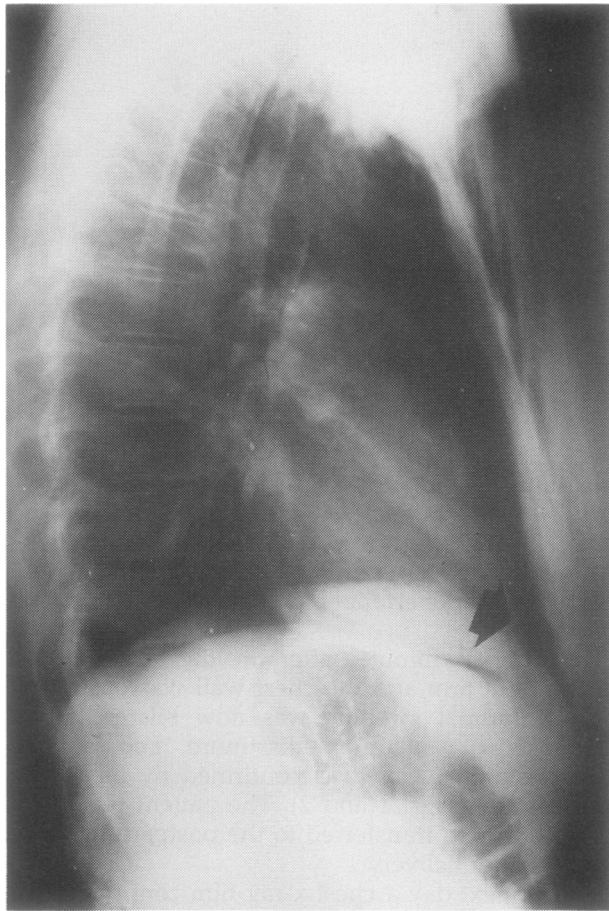


Fig. 1 — Lateral view shows air in anterior mediastinum (arrow).

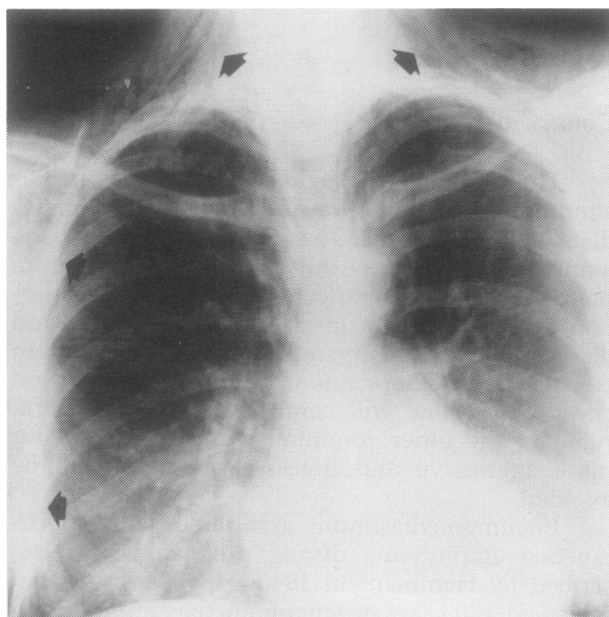


Fig. 2 — Posteroanterior view shows subcutaneous emphysema of axilla and neck (arrows).

In the case we have described, the unilateral periorbital swelling was probably due to subcutaneous air. Differential diagnosis of the patient's chest pain and dyspnea was further complicated by the possibility of toxicity of the local anesthetic. Amniotic fluid embolism was likely because of the operative delivery and the use of oxytocin for the postpartum hemorrhage. Pneumomediastinum, initially dismissed because of its rarity, was diagnosed only after crepitus of the subcutaneous tissues was detected.

Various symptoms that may accompany pneumomediastinum include substernal or lateral thoracic pain that may radiate to the neck,¹ a tearing sensation or dyspnea, a change of voice, aphonia, coughing, dysphagia, soreness of the throat, palpitations, anxiety, hemoptysis and crackling sounds in the chest.^{1,4} Crepitations of the face, neck, chest and upper limbs are indications of pneumomediastinum. Tachycardia, fever, loss of cardiac dullness, decreased heart sounds or crunching sounds over the precordium synchronous with the cardiac cycle (Hamman's sign) may be present.^{1,4} However, most patients have minimal signs and symptoms, and the condition usually follows a benign course, as in the case we have presented. Cyanosis, venous distension and signs of cardiorespiratory failure are rare and would be present only if pneumopericardium or tension pneumothorax had occurred.^{1,4} Leukocytosis is a common laboratory finding. Abnormal ECG readings are rare and include non-specific changes in the ST segment and T wave, inversion or deviation of the cardiac axis and displacement of the atrial pacemaker.^{1,4} Arterial blood gas values are usually normal. Radiographic findings include pneumomediastinum and subcutaneous air.

Invasive monitoring and aggressive management are required only if cardiorespiratory failure is present. Pneumomediastinum must be considered in pregnant women who present with chest pain, hypotension, dyspnea or cyanosis. It occurs most often in primiparous women and is usually associated with a prolonged second stage of labour. The clinical course is often benign, and conservative treatment is preferred because of the negligible risk of perinatal or maternal disability.

References

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