Spontaneous Pneumomediastinum in a Neonate: a rare complication of vaginal delivery

CHENG-YI CHAN  YUAN-YU HSU  KUN-ENG LIM  HSU-CHAO CHANG  HSU-WEN KUO  YUEH-HUA TSAI
Department of Medical Imaging, Buddhist Tzu Chi General Hospital, Taipei Branch

Spontaneous pneumomediastinum in a term baby without birth injury is rare. Most cases with pneumomediastinum are associated with prematurity, pneumonia, meconium aspiration syndrome, difficult delivery or mechanical ventilation. We present a term baby with spontaneous pneumomediastinum who was born by an uncomplicated normal vaginal delivery.

CASE REPORT

A male neonate was delivered vaginally at term (gestational age= 40weeks). The birth weight was 4532 gm. The Apgar score were 9 and 9 at 1 and 5 minutes, respectively. Although well at birth, he began to have mild tachypnea 6 hours latter. The results of arterial blood gas study revealed an acceptable level of gas exchange (PaO2=99%, PaCO2=4%). The chest radiograph demonstrated pneumomediastinum with the “angel-wing sign” (Fig. 1). The chest CT showed air collection in the anterior mediastinum with mass effect to adjacent mediastinal and pulmonary structures (Fig. 2). No evidence of pneumothorax, nor pulmonary parenchymal abnormality was identified. Conservative treatment was performed and follow-up chest radiograph revealed spontaneous resorption of the pneumomediastinum 3 days latter (Fig. 3).

DISCUSSION

Spontaneous pneumomediastinum in a well newborn is rare [1, 2]. Most neonatal pneumomediastinum occurs associated with birth injury, prematurity, pneumonia, meconium aspiration syndrome or assisted ventilation [1-6]. Spontaneous neonatal pneumomediastinum is the result of air leak due to increases in the pressure gradient between alveolar and perivascular space [1]. The present case developed spontaneous pneumomediastinum without evidence of birth injury or any abnormal antenatal history. The most remarkable birth history in our case
Spontaneous pneumomediastinum in a neonate

was a big term baby delivered vaginally. Despite there was no evident birth injury, the big term baby may pass the vagina with his thoracic cage over-compressed during delivery. Under such circumstances the pressure gradient between the alveolar and perivascular space could elevate abnormally high during a short period and alveolar rupture occurred. This condition is expected to occur within several hours after birth and respiratory distress develops gradually. The pneumomediastinum will disappear a few days latter and artificial drainage is unnecessary.

The other causes of pneumomediastinum are birth injury and meconium aspiration syndrome. Shoulder dystonia is the majority cause among birth injuries resulting in pneumomediastinum [4]. Trachea and subglottic tears may occur during the delivery. Not only pneumomediastinum, but also pneumothorax and subcutaneous emphysema in neck region were noted [4, 5]. Rapid respiratory distress is the most important sign. A prompt diagnosis and viewing the airway with flexible endoscopy-guided intubation can reduce the morbidity and mortality [4]. Meconium aspiration syndrome occurs in a term baby who is born through the meconium stained amniotic fluid [3]. Meconium stained amniotic fluid, respiratory distress, pneumothorax, pneumomediastinum and interstitial emphysema are the clinical clues of meconium aspiration syndrome [3]. Respiratory support and chest tube intubation can reduce the mortality [3].

In conclusion, spontaneous pneumomediastinum is a rare complication of vaginal delivery. However, it may occur in a term neonate with a large birth weight as shown in our case. Conservative treatment and close follow-up are suggested. Contrarily, airway tear or meconium aspiration syndrome should be considered and treated accordingly if respiratory distress is associated with imaging findings other than pneumomediastinum, such as pneumothorax, subcutaneous emphysema or interstitial emphysema.
REFERENCES


新生兒自發性縱膈腔積氣：一經陰道自然生產的罕見併發症

詹正義  許元昱  林坤榮  張旭超  郭秀雯  蔡悅華

佛教慈濟綜合醫院台北分院  影像醫學部

自發性縱膈腔積氣很少發生在無生產傷害的足月產新生兒身上。大多數的案例都與早產、肺炎、胎便吸入症候群、難產或機械性換氣有關。在此報告一個足月經陰道無併發症自然生產的新生兒發生自發性縱膈腔積氣的案例。