



## Neonatal Pneumopericardium and Pneumomediastinum

Jianqing Jiang\*, Zhiren Wang, Yifeng Zheng and Bin Du

Department of Thoracic Surgery, General Hospital of Western Theater Command, China

### Clinical Image

A 2,700-gram, gestational age of 34<sup>+3</sup> weeks female infant, was born to a 42-year-old G3P2 mother by vaginal delivery. At 1 h of age, she was noted to have respiratory distress with tachypnea. In the local hospital, the preterm neonate accepted endotracheal intubation and mechanical ventilation. Physical examination showed an obvious three depressions sign, nasal flaring and the complexion of cyanosis, and auscultation revealed diminished air entry the chest as well as muffled heart sound. Laboratory assessment showed a respiratory acidosis and respiratory failure (pH 7.18; base excess - 5.6 mmol/L; pCO<sub>2</sub> 8.13 kPa; pO<sub>2</sub> 4.94 kPa; LAC 2.8 mmol/L). A chest X-ray revealed a decrease of pulmonary transmittance and two halos around the heart filled with air (Figure 1). The diagnosis was Hyaline Membrane Disease (HMD) with Pneumopericardium (PPC) and Pneumomediastinum (PM). Since the baby was otherwise hemodynamically stable, conservative management was taken. Our patient was discharged home from the hospital on day 27 in stable condition. During the 9-month of follow-up, the infant was growing well with no recurrence. PPC is one of the rarest and least common forms of air leaks in neonates. The risk factor for PPC described is surfactant deficiency, mechanical ventilation, positive pressure ventilation, and low birth weight [1]. Due to the over distended alveoli rupture, the air enters the pericardial sac through the pericardium folds over the pulmonary veins where lack of collagenous tissue. Diagnosis is often confirmed by chest X-ray. Air can be seen surrounding the heart, called “halo sign”, pericardial air will be observed below the heart but does not extend above the level of the great vessels as it does with a pneumomediastinum [2]. Conservative treatment is effective in most patients, but emergency pericardiocentesis is vital in the event of a significant hemodynamic disturbance. The volume of air extracted during a pericardiocentesis in a newborn ranged from 2.9 ml/kg to 14 ml/kg [3]. Prevention should go beyond treatment, through gentler modes of ventilation, surfactant replacement, and the use of maternal antenatal steroids, the morbidity and mortality will be decreased. In October 2015, Chinese government enacted two-child policy to deal with rapid population ageing and decrease in abortions of unapproved pregnancies, but the increasing risk of preterm delivery in elder pregnant woman is also should arouse public concern.

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#### \*Correspondence:

Jianqing Jiang, Department of Thoracic Surgery, General Hospital of Western Theater Command, Chengdu, No 270 of Tianhui Road, Chengdu, Sichuan, 6190000, China, Tel: 13880870701; E-mail: jjqcd@soho.com

Received Date: 26 Mar 2021

Accepted Date: 26 Apr 2021

Published Date: 29 Apr 2021

#### Citation:

Jiang J, Wang Z, Zheng Y, Du B. Neonatal Pneumopericardium and Pneumomediastinum. *Clin Surg*. 2021; 6: 3145.

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Figure 1: Chest X-ray revealed a decrease of pulmonary transmittance and two halos around the heart filled with air.

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