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Endotracheal adrenaline use a newborn with pulmonary hemorrhage: A case report

Yenidoğanda endotrakeal yolla verilen adrenalin ile tedavi edilen pulmoner kanama: Olgu sunumu

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Abstract

Pulmonary hemorrhage in the newborn is an acute and idiopathic event characterized by discharge of bloody fluid from the respiratory tract or endotracheal tube. In this case report we discussed 5 hours old neonate with pulmonary bleeding. We showed that endotracheal adrenaline use, gastric lavage with cold water and use of vitamin K in the treatment of neonates with pulmonary bleeding might shorten the duration of treatment and lower the mortality rate.

Keywords: Pulmonary hemorrhage, Newborn, Adrenalin, Vitamin K

Öz

Pulmoner kanama bebeklerde görülen ve nedeni tam olarak aydınlatılmamış olan akciğerlerde kanama ile karakterize bir klinik durumdur. Bu olgu sunumunda yaşamının 5. saatinde pulmoner kanaması görülen bir bebek tartışılmıştır. Etyolojisi net olarak saptanamayan pulmoner kanama vakalarında endotrakeal yol ile adrenalin tedavisi, midenin soğuk mayi ile yıkanması ve K vitamini tedavisinin birlikte yapılması durumunda iyileşmeyi hızlandıracağı ve mortaliteyi azaltacağı kanaatinde varıldı.

Anahtar kelimeler: Pulmoner kanama, Yenidoğan, Adrenalin, K vitamini

Introduction

Pulmonary hemorrhage in the newborn is an acute, idiopathic clinical event characterized by discharge of bloody fluid from the respiratory tract and lungs of especially premature and low birth weight infants. Pulmonary hemorrhage has the highest mortality rate in very low birth weight premature infants. While the incidence of pulmonary hemorrhage varies from 1% to 11% at live births, incidence varies from 3% to 32% in very low birth weight premature infants [1-4]. Pulmonary hemorrhage has 50-82% mortality rate in premature infants [3]. Pulmonary hemorrhage is an uncommon symptom in mature infants. In this study we aimed to report an infant with pulmonary bleeding and respiratory distress who had treatment of endotracheal adrenaline, gastric lavage with cold saline water and vitamin K, and we discussed the pulmonary hemorrhage as an uncommon symptom of mature infant.

Case presentation

Apgar score of male newborn who was born weight 3410 gr, in 39 week of gestational age and son of 24 years old mother was 7. The reason of consultation were intercostal retractions, moaning, pulmonary bleeding (there was no consanguinity status between parents and there was a healthy brother of baby, there was no specific pathology in prenatal history). At the physical examination of the baby, general status was not good. The baby was intubated and connected to mechanic ventilator because of his low capillary oxygen saturation levels. While intubation process was performed, active bleeding was found in gastric lavage. So we administered fresh frozen plasma and vitamin K to the patient. Report of thorax ultrasonography (USG) didn't show any pleural fluid, and echocardiography and transfontanel USG of the patient were also normal.

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Patient's blood tests were found as; Hemoglobin: 17.0 g/dL, leukocyte: 16700 /uL, platelets: 207000 /uL, aPTT: 35.9 sec, aspartate transaminase: 95.7 U/L, alanine transaminase: 16.4 U/L, pH: 6.9 (normal range: 7.35-7.45), HCO₃: 7.8 mEq/L (22-26) and pCO₂: 47.0 mmHg (35-45). PT test could not be calculated by laboratory despite three attempts. Serum urea, blood urea nitrogen and creatinine levels were in normal reference ranges.

There was ground glass opacity in patient's chest x-ray (Figure 1). Patient's respiratory tract has been washed by could fluid with infusion of adrenaline by his intubation tube, and gastric lavage was performed with cold saline water. Ranitidine, sodium bicarbonate, antibiotherapy and IV fluids were used for the management of the patient. Four hours later, blood tests showed that INR: 1.21, aPTT: 26.2 sec, and chest x-ray was normal (Figure 2).

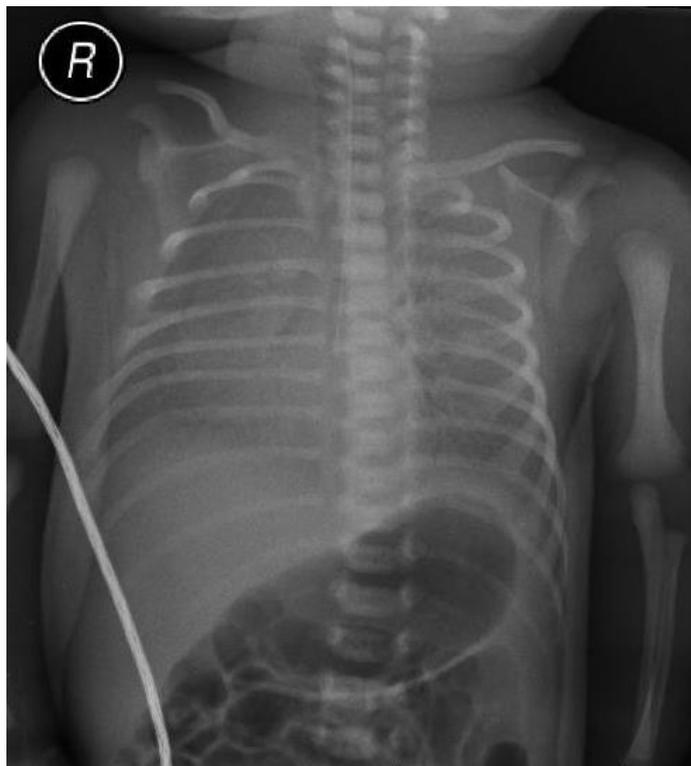


Figure 1: Chest x-ray of the patient at initial examination

We transfused platelet suspension for low (46000 /uL) platelet count on blood analysis during the second day of stay. At his follow-up bleeding was not been observed again and respiratory findings improved. At the day 8 the patient was extubated, afterwards at the day 28 patient needed oxygen therapy, and bronchopulmonary dysplasia (BPD) protocol (prednisolon, salbutamol) was applied. The baby was discharged at 31th day of the treatment.



Figure 2: Chest x-ray after the patient's treatment

Discussion

Incidence of Pulmonary hemorrhage in the newborn is %1-12 at live births. On the other hand in very low birth weight premature infant, incidence is higher, and also occurs serious, rapidly progressive and mortal. There were few clinical researches about pulmonary hemorrhage and risk factors in the newborn at the literature [3-5].

Etiology of diseases still unknown but there are some risk factors such as low gestational age, resuscitation at birth room, asphyxia, lacking of antenatal steroid, patent ductus arteriosus (PDA), infection and surfactant treatment [6-7]. Antenatal steroid use is an important protective factor on premature [8].

In a study conducted by Ferreira et al. [8] with 67 cases of pulmonary hemorrhage in Brazil in 2014, when the first and fifth minute Apgar values were analyzed, no correlation was found between pulmonary hemorrhage and increased use of surfactant and increased incidence of pulmonary hemorrhage with increasing dose. Özalkaya et al. [3] in 2015 reported a research that cases with Pulmonary hemorrhage were mainly premature with the respiratory distress syndrome (RDS) and got surfactant treatment at the sometimes of their lives. Our case was a mature neonate and there were no risk factors.

Hemorrhagic disease of the newborn develops because of lacking of vitamin K. Vitamin K deficient bleeding is usually classified by three distinct time periods after birth. Early onset occurs within 24 hours of birth, classic onset occurs within two to seven days, late onset occurs within two weeks to twelve weeks. Bleeding can occur in one or multiple areas, and can be

with high rates of mortality, morbidity including: umbilical, nasal, urogenital, gastrointestinal, intracranial, pulmonary areas of body. Patients with vitamin K deficiency tend to have prolongation of PT, aPTT and normal platelet counts. There are no specific tests to diagnose hemorrhagic disease of the newborn. However, if PT and aPTT levels get normal after the administration of vitamin K, we can confirm diagnosis of hemorrhagic disease of the newborn [9]. We confirmed the case as hemorrhagic disease of the newborn because we have seen levels of PT and aPTT normalized after administration of vitamin K.

Quick diagnosis and treatment can lower the mortality, and takes important part of prognosis. Pulmonary hemorrhage can be diagnosed using chest x-ray, lung USG, and arterial blood analysis. Chest x-ray findings are not specific but can be helpful if there were ground glass and raised opacity [4]. In patient ground glass opacity chest x-ray and blood analysis were confirmed the diagnosis.

Up to date treatments of pulmonary hemorrhage are endotracheal adrenaline, use high frequency ventilation and supportive interventions [10]. We use vitamin K and gastric lavage as supplemental interventions after the patient etiology was confirmed so. Four hours later with our treatments patient's clinical and radiologic findings rapidly improved. At the follow ups we diagnosed BPD on our patient and we thought this could be the secondary to pulmonary bleeding history of the patient.

In conclusion, we decided that gastrointestinal bleeding could not be excluded in neonates with pulmonary bleeding with unknown etiology. Use of endotracheal adrenaline, vitamin K administration and gastric lavage with cold saline water may lower healing time and mortality rates. Regression of symptoms and radiologic findings within four hours can be helpful to identify subgroups of this disease and can contribute new strategies in the treatment of newborns hemorrhagic disease.

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