

Hydrothorax Complicating Peritoneal Dialysis, a Case Report

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Abstract

Hydrothorax is a rare but serious complication of peritoneal dialysis. We report a recurrent pleural effusion in a case of ESRD (end stage renal disease) treated by pleurodesis using tetracycline.

Keywords: Sweet pleural effusion; Peritoneal Dialysis; Pleurodesis; Child.

Conflict of interest: The authors declare no conflict of interest.

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Introduction

Pleural effusion can be produced as a rare complication of peritoneal dialysis (PD). Peritoneal dialysis causes increasing intra-abdominal pressure and as the inspiratory pressure of pleural space is negative, the abdominal fluid enters into pleural cavity and causes respiratory distress due to limitation of ventilation (1). We present a case of end stage renal disease (ESRD) with PD suffering of pleural effusion treated by pleurodesis using tetracycline.

Case report

A 17 month-old-boy, the case of ESRD due to autosomal recessive poly cystic kidney disease that had been under peritoneal dialysis since 8 months old and given anti-hypertensive drugs and renal supplements, was admitted frequently in hospital since 12 months of age due to respiratory distress. At the first hospitalization because of muffled respiratory sound, chest X ray and pleural sonography were done showing massive right pleural effusion (Figure

1). Diagnostic thoracentesis result revealed transudate fluid (White blood cell: 2000/mcl, Red blood cell: 87000000/mcl, Glucose: 130 mg/dl. Simultaneous serum glucose: 75mg/dl, Protein: 0.4 mg/dl, Lactate Dehydrogenase: 15u/ml, he same time serum Lactate Dehydrogenase was 480u/ml and culture was negative).

After 10 days of treatment he was cured and discharged.

At 17 months of age he was admitted in hospital because of peritonitis, pneumonia and pleural effusion. Treatment by antibiotics for 10 days and thoracentesis was performed and the patient was discharged. 48 hours later he came back because of cough, respiratory distress and malaise. His oxygen saturation was 88% and right pulmonary sound was muffled. Detecting massive pleural effusion, 50 ml colorless transudate fluid was extracted and analyzed. After resolving respiratory distress, peritoneal dialysis was started every 2 hours with

100 ml liquid. During second day 200 ml liquid was used every 3 hours.

After three days, respiratory distress was appeared and pleural effusion developed. Thoracentesis was repeated 4 times and every time between 50-80 ml of fluid was getting out. Pleural effusion volume was directly related to the amount of liquid dialysis. The biochemical analysis and cell differentiation of effusion was according to transudate. Peritoneal dialysis was interrupted. The patient was undergone right side pleurodesis (by 200 mg tetracycline). After 3 days, peritoneal dialysis was started by 100 ml and gradually increased to 300 ml every 2 hours. The control X ray showed improving with no significant effusion (figure 2). He is continuing peritoneal dialysis without respiratory problem during 6 months after pleurodesis.

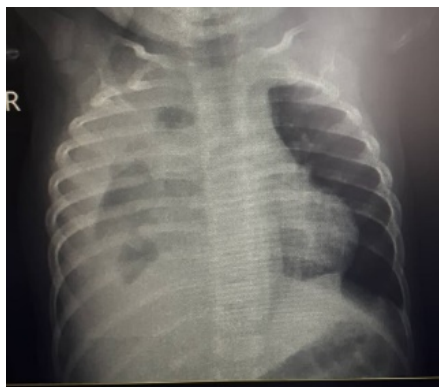


Figure 1. Before treatment



Figure 2. After treatment

Discussion

High glucose level of pleural fluid in this case is compatible with PD fluid leakage to pleural space. Sweet hydrothorax (the pleural fluid glucose and the

serum glucose gradient more than 50 mg/dl) with low protein concentration is a finding in pleural effusion originated from PD fluid. Congenital communication between two cavities causes gathering of fluid in pleural space. Accumulation of fluid in pleural space following PD is due to pressure in abdominal cavity (1). The incidence of PE following PD is about 3-10% mostly in the right side (2-4). Large volume causes restriction in lung expansion and induces pressure on mediastinum. High volume dialysis causes more PE than low volumes (40 ml/kg versus 10 ml/kg) (5). Although some patients are asymptomatic, PE is an important complication of PD necessitates interrupting this procedure because of producing respiratory distress and shortness of breathing and hypoxemia. Thoracentesis can differ hydrothorax from PD fluid. High glucose level in Peritoneal fluid is a unique diagnostic marker. Instillation of Methylene Blue in Peritoneal fluid also makes this phenomenon distinguishable, but chemical peritonitis is its complication (6).

Fluid flow is unidirect from peritoneal space to the pleural space. Trauma or increasing pressure of abdominal cavity due to cough or huge volume of PD fluid causes this leakage. Respiratory distress can happen in three forth of these patients (1, 7, 8). Management is doing by conservative methods like reduction the amount of PD each time or using hemodialysis temporary or permanently (4). Failure of these methods necessitates using more invasive procedures like VATS and chemical pleurodesis by using Talc powder or mechanical rubbing (9). Tetracycline is another chemical pleurodesis agent (10).

Conclusion

Pleural effusion can be produced as a rare complication of peritoneal Dialysis. Sweet hydrothorax with low protein concentration is a finding in pleural effusion originated from PD fluid. Congenital communication between two cavities causes gathering of fluid in pleural space.

Conflict of Interest

The authors declare no conflicts of interest.

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