Acute-recurrent subcutaneous emphysema after ventriculopleural shunt placement

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Ventriculopleural shunts are an alternative to ventriculoperitoneal shunts for draining the CSF. They are used in patients that have failed multiple ventriculoperitoneal shunts because of peritonitis, loculated ascites or pseudocyst formation. They have the risk of respiratory insufficiency because of pneumothorax or pleural effusion. Recent shunts have a valve with anti-siphon device that prevent the development of pleural effusion.

We describe a case of acute recurrent subcutaneous emphysema around the incision after placement of a ventriculopleural shunt. The patient is a 4 years 10 month old, 14 kg, AA girl with extensive previous medical and surgical history brought to the OR for malfunctioning ventriculoperitoneal shunt and conversion to a ventriculopleural shunt.

Patient was brought to the OR with increased sleepiness and complains of headache. She had a PIV and she was easily intubated after preoxygenation and intravenous induction with 3mcg/kg Fentanyl, 3mg/kg Propofol and 0.3 mg/kg Mivacurium. Anesthesia was maintained with Sevofluran in 50%Oxygen /Air. Nitrous Oxide was avoided because of the risk of pneumothorax associated with the procedure. The surgery underwent uneventfully. On emergence, prior to extubation the patient started to cough and buck and her oxygen saturation decreased in the lows 60’s. After 4-5 cough efforts we notice an increased lumpiness over her right upper anterior chest, around the dressing from the new shunt insertion. As soon as the cough effort would stop the lump would disappear and the oxygen saturation would return to 100%. After another episode of coughing we were able to palpate subcutaneous emphysema over the right anterior chest (crepitus). Suspecting a pneumothorax, we asked for a chest X-ray which was done with the patient in reverse Trendelenburg and right lateral decubitus positioning in order to maximize the chances of visualizing a potential pneumothorax. The CXR was negative and once again we tried to extubate the patient. The patient was not wheezing throughout the events and auscultation was positive for decreased breaths sound at the left lower lung and bilateral mild crackles. During the waiting period for the CXR results we kept the patient on FiO2 100% trying to speed up the reabsorption of the possible pneumothorax. Lidocaine was instilled through the endotracheal tube to allow patient to wake up more comfortably and tolerate the endotracheal tube. This time the patient was not coughing and we were able to extubate her. Six hours later a follow-up CXR showed small right pneumothorax and subcutaneous emphysema, small right pleural effusion and patchy atelectasis. She had an uneventful recovery and she did not require a chest tube. She was discharged home the next day and she was doing fine at her 1 month follow up appointment.
This is a report of a complication after ventriculopleural shunt placement in a pediatric patient.

References: