

Catheter-related Chylothorax

Question:

Recently a patient with an implanted port developed a cloudy drainage from his port pocket each time the port was accessed. (Figure 1) Cultures were not positive for microorganisms other than normal skin flora. This was finally diagnosed as a chylothorax, yet this is a complication I was not aware of. What is a chylothorax and how does it happen?

Answer:

Chyle is the lymph fluid from the small intestines where it absorbs fat globules that give it a milky appearance. The thoracic duct is the largest lymph vessel draining lymph from the lower extremities and the abdominal cavity. A common terminal point of the thoracic duct is the left subclavian vein, however it has been documented to join the internal jugular vein, the jugular-subclavian junction and the innominate vein. A smaller right lymphatic duct joins the right jugular-subclavian junction on the anterior aspect. 1

Catheters inserted through the left subclavian vein, especially when the supraclavicular approach is used, can damage the thoracic duct. This can result in chyle entering the pleural cavity or draining from the puncture site. Jugular catheterization has also been reported to cause chylothorax. 2

This implanted port was inserted through the left subclavian vein, although the actual venous approach is unknown. Chyle drained from the damaged thoracic duct down the short segment of catheter and into the port pocket. Each time this port was accessed, chyle drained from the puncture site.

Transection of the thoracic duct may be noticed during catheter insertion if a milky substance is withdrawn from the introducer needle or catheter. During dwell of a left-sided catheter insertion, a chylous fistula could develop causing the milky drainage to appear after insertion.

Chylothorax can also result from large superior vena caval and subclavian thromboses associated with the presence of a central venous catheter. The presence of large thromboses occludes the thoracic duct and prohibits proper flow of chyle into the bloodstream. These case studies also report bilateral chylothorax, pleural effusion and even chylopericardium. 3, 4

When lymph fluid enters the pleural cavity, the signs and symptoms are similar to hemothorax. Sudden onset of chest pain and dyspnea is usually seen when the pleural cavity fills with chyle after the needle or catheter passes through the thoracic duct.

A quick way to diagnose this complication is to measure the glucose content of the drainage. Chyle has high glucose content. Catheter removal is indicated along with oxygen and possibly a chest tube to drain the pleural space. 5

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