A Closer Look At...

Chylous vs. Pseudochylous Effusions

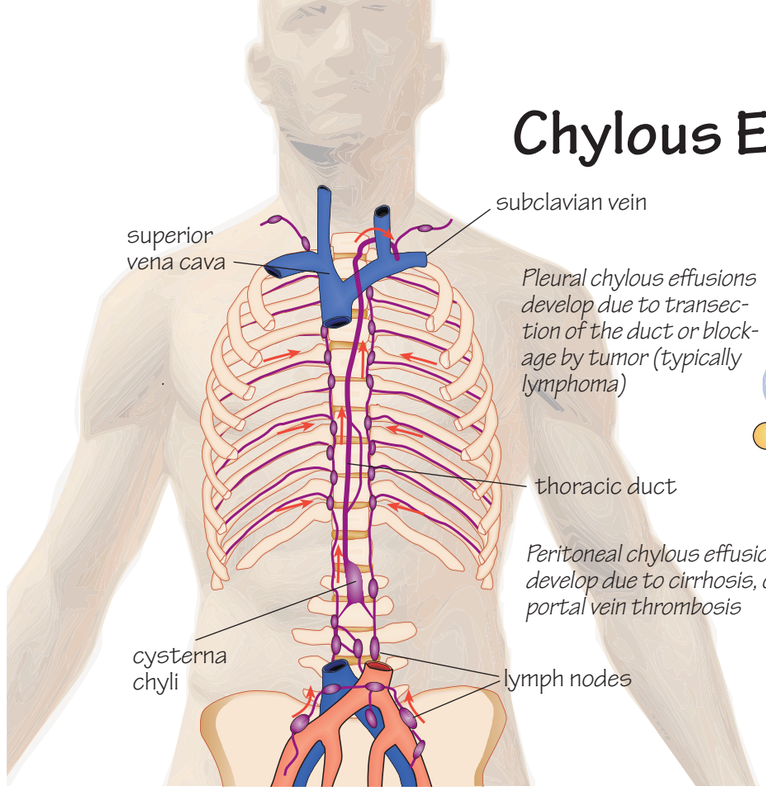
Accumulations of fluid in body cavities are broadly grouped into the two categories of transudates and exudates based on total protein, albumin, and LDH levels (see page 78). Many additional parameters, such as glucose, cell count and differential, and microbiologic culture, are often evaluated as well. Transudates are usually benign and are commonly the result of congestive heart failure or cirrhosis with hypoalbuminemia. Exudates often signify serious abnormalities such as infection or malignancy.

Lymph from the lower extremities, abdomen, and thorax is returned to the circulation by the thoracic duct system. This duct is formed by the confluence of lymphatics draining the abdomen and lower extremities just below the aorta. It then ascends along the vertebral column, receiving lymph originating in the thorax, and terminates at the left subclavian vein, returning lymph to the circulation. Lymph flow is greatly enhanced during the absorptive phase of digestion, and this lymph is rich in chylomicrons, giving it a milky turbid appearance. On the other hand, thoracic duct lymph in the post-absorptive state is clear.

Chylous effusions are an uncommon cause of an exudative effusion. Chylous effusions are described as turbid or milky, but if composed solely of post-absorptive lymph, may be clear. They are frequently cellular and are rich in triglycerides, with a normal cholesterol level. Chylomicrons can be identified if a smear is stained for neutral fat using stains such as Oil Red O or Sudan III. Chylous effusions occur in the pleural and peritoneal cavities. Causes of chylous ascites include obstruction of lymphatic drainage by cirrhosis or portal vein thrombosis, and rare cases of congenital lymphatic anomalies may be the cause in children. Chylous pleural effusions are usually due to thoracic duct transection by trauma or surgery, or obstruction of the thoracic duct by a malignancy, often lymphoma.

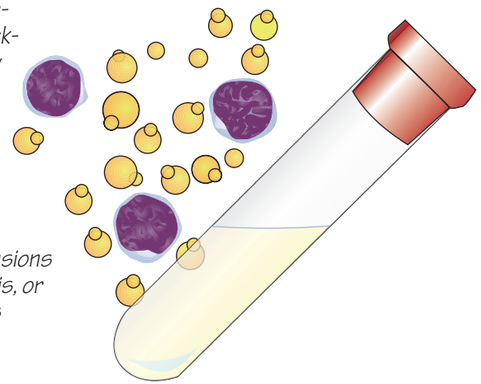
Most lipid-rich effusions, particularly those from the pleural and peritoneal cavities, are chylous. However, there is another group of cloudy to opalescent effusions that are important to recognize as they have very different origins and clinical significance. These "pseudochylous" or "chyliform" effusions are often post-inflammatory, but they can be a feature of any long-standing effusion. They are more common in effusions originating in the pericardial, joint, and bursal spaces, and are rich in cholesterol, with low triglyceride content and no chylomicrons. Formed elements present commonly include cholesterol crystals, but lipid-laden macrophages or, rarely, malignant cells may be found as well. These effusions are not of primary lymphatic origin but arise from breakdown products of any chronic effusion. Thus, clinical considerations include rheumatoid arthritis or other collagen vascular diseases, tuberculosis, or a nonspecific chronic bursitis, such as "housemaid's knee."

Chylous Effusions



Pleural chylous effusions develop due to transection of the duct or blockage by tumor (typically lymphoma)

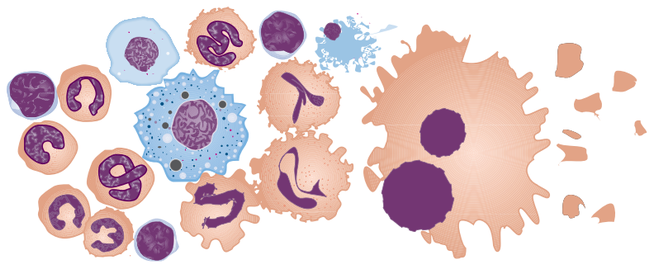
Peritoneal chylous effusions develop due to cirrhosis, or portal vein thrombosis



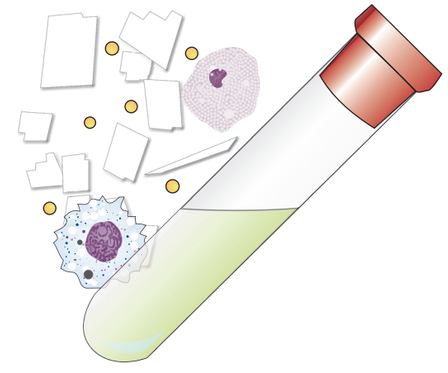
Chylous effusions are rich in triglycerides and chylomicrons, with normal levels of cholesterol; lymphocytes may also be found.

The thoracic duct runs along the spinal column, carrying lymph from the legs, gut, and chest. It is a fluid rich in lymphocytes and chylomicrons. Chylous effusions of the peritoneal and pleural cavities develop when the flow is obstructed.

Pseudochylous Effusions



Chronic long-standing effusions contain breakdown products of cells which are rich in cholesterol (a major component of cell membranes).



Pseudochylous effusions are rich in cholesterol, with normal levels of triglycerides and no chylomicrons; lipid-laden macrophages may be seen.