Overview

Useful For
An adjuvant to cytology and imaging studies to differentiate between nonmalignant and malignant causes of pleural effusions

Method Name
Immunoenzymatic Assay

NY State Available
Yes

Specimen

Specimen Type
Pleural Fluid

Specimen Required
Patient Preparation: For 12 hours before specimen collection do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Container/Tube: Plain, plastic, screw-top tube

Specimen Volume: 2 mL

Forms
If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Reject Due To
Gross hemolysis Reject

Specimen Minimum Volume
0.5 mL (Samples <0.5 mL may be rejected)

Specimen Stability Information

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<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tr>
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Clinical & Interpretive

Clinical Information
Pleural effusions occur as a consequence of either nonmalignant conditions (including congestive heart failure,
Pneumonia, pulmonary embolism, and liver cirrhosis) or malignant conditions (including lung, breast, and lymphoma cancers). Diagnosing the cause of an effusion can be difficult, requiring cytological examination of the fluid. Analysis of various tumor markers in pleural fluid has shown that these markers can differentiate between effusions caused by nonmalignant and malignant conditions and can enhance cytology findings.

Carbohydrate antigen 19-9 (CA 19-9) is a modified Lewis(a) blood group antigen. Healthy adults typically produce low to undetectable levels of CA 19-9. Serum concentrations of CA 19-9 may be elevated in patients with certain malignancies that secrete CA 19-9 into circulation, including cholangiocarcinoma, colorectal, stomach, bile duct, lung, ovarian, and pancreatic cancers.

Pleural fluid concentrations of CA 19-9 have been reported to be elevated in patients with certain malignancies. Malignancies that can secrete CA 19-9 and elevate serum CA 19-9 concentrations, including cholangiocarcinoma, colorectal, stomach, bile duct, lung, ovarian, and pancreatic cancers, typically also elevate CA 19-9 in pleural fluid. In contrast, malignancies that do not secrete CA 19-9, including mesothelioma, lymphoma, leukemia, and melanoma, have low concentrations of CA 19-9 in pleural fluid comparable to concentrations observed in nonmalignant effusions. CA 19-9 results should be used in conjunction with cytological analysis of pleural fluid, imaging studies, and other clinical findings.

Reference Values
An interpretive report will be provided.

Interpretation
A pleural fluid carbohydrate antigen 19-9 (CA 19-9) concentration of 20.0 U/mL or higher is suspicious, but not diagnostic, of a malignant source of the effusion. This cutoff yielded a sensitivity of 35%, specificity of 95%, and positive predictive value of 88% in a study of 200 patients presenting with effusion. CA 19-9 concentrations were significantly higher in effusions caused by CA 19-9-secreting malignancies, including cholangiocarcinoma, colorectal, stomach, bile duct, lung, ovarian, and pancreatic cancers. However, effusions caused by non-CA 19-9-secreting malignancies, including lymphoma, mesothelioma, leukemia, and melanoma, routinely had CA 19-9 concentrations below 20.0 U/mL. Therefore, negative results should be interpreted with caution, especially in patients who have or are suspected of having a non-CA 19-9-secreting malignancy.

Correlation of all tumor marker results with cytology and imaging is highly recommended.

Cautions
Twelve hours before this blood test, do not take multivitamins or dietary supplements containing biotin or vitamin B7 that are commonly found in hair, skin and nail supplements and multivitamins.

This test result should not be the sole basis for diagnosis. Carbohydrate antigen 19-9 (CA 19-9) is not specific for malignancy and testing has limited utility when used as the sole diagnostic test. Test results should be always correlated with cytology, imaging, and other clinical findings.

A low or negative CA 19-9 result (<20.0 U/mL) may be uninformative or misleading, as certain malignancies do not secrete CA 19-9 and will not produce elevated CA 19-9 concentrations in pleural effusions. Negative results should be interpreted with caution in patients who have or are suspected of having a non-CA 19-9-secreting malignancy or who have a cancer of unknown primary origin. Alternative methodologies, including cytology, imaging, and other tumor markers, are recommended instead.
Certain individuals (Lewis nonsecretors) do not produce the CA 19-9 antigen. A low or negative CA 19-9 result may, therefore, be uninformative or misleading in these individuals. Measuring serum CA 19-9 concentrations may be helpful to determine if the patient is a Lewis nonsecretor.

Serum CA 19-9 concentrations have been reported to be elevated as a consequence of certain nonmalignant conditions, including liver cirrhosis, pancreatitis, gallstones, and cholecystitis. It is unknown whether these conditions also cause CA 19-9 elevations in pleural fluid. Results should therefore be interpreted with caution in patients with these conditions.

Clinical Reference

Performance

Method Description
The instrument used is a Beckman Coulter Dxi 800. The Access Gi Monitor assay is a 2-site immunoenzymatic sandwich assay. A sample is added to a reaction vessel along with paramagnetic particles coated with polyclonal goat antibiotin antibody, mouse monoclonal biotin conjugate, and buffered protein solution. After incubation in a reaction vessel, separation in a magnetic field, and washing to remove materials not bound to the solid phase, a monoclonal-alkaline phosphatase conjugate is added. After incubation in a reaction vessel, materials bound to the solid phase are held in a magnetic field, while unbound materials are washed away. The chemiluminescent substrate Lumi-Phos 530 is added to the vessel and light generated by the reaction is measured with a luminometer. The light production is directly proportional to the concentration of carbohydrate antigen 19-9 antigen in the sample. The amount of analyte in the sample is determined from a stored, multipoint calibration curve. (Package insert: Access Gi Monitor assay, Beckman Coulter, Inc., Brea, CA, 2015)

PDF Report
No

Specimen Retention Time
12 months

Performing Laboratory Location
Rochester

Fees & Codes

Test Classification
This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.
CPT Code Information
86301

LOINC® Information

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