MAYO CLINIC LABORATORIES

Test Definition: BHSF

Beta-Human Chorionic Gonadotropin, Quantitative, Spinal Fluid

Overview

Useful For

Aiding in the diagnosis of brain metastases of testicular cancer or extragonadal intracerebral germ cell tumors

Highlights

Measurement of human chorionic gonadotropin (hCG) is used as an adjunct in the diagnosis of central nervous system (CNS) metastases or recurrence of tumor in patients with germ cell tumors.

Quantitation of the hCG in cerebrospinal fluid (CSF) can be important in guiding treatment and monitoring response to treatment of these tumors.

Measurement of hCG in CSF should not be the only parameter used to determine the presence of CNS metastases in patients with germ cell tumors.

Method Name

Electrochemiluminescent Immunoassay (ECLIA)

NY State Available

Yes

Specimen

Specimen Type

CSF

Specimen Required

Patient Preparation: For 12 hours before specimen collection, patient should not take multivitamins or dietary supplements (eg, hair, skin, and nail supplements) containing biotin (vitamin B7).
Container/Tube: Sterile vial
Specimen Volume: 1 mL
Collection Instructions: Submit specimen from collection vial number 1.

Forms

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

Specimen Minimum Volume

0.75 mL

Reject Due To

Hemolysis	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Refrigerated (preferred)	28 days	
	Ambient	14 days	
	Frozen	14 days	

Clinical & Interpretive

Clinical Information

Human chorionic gonadotropin (hCG) is synthesized during pregnancy by syncytiotrophoblast cells. hCG may also be produced by neoplastic cells of testicular tumors (seminomas or nonseminomas), ovarian germ cell tumors, gestational trophoblastic disease, choriocarcinoma, and various nontrophoblastic tumors including breast, ovarian, pancreatic, cervical, gastric, and hepatic cancers.

Measurement of hCG is used as an adjunct in the diagnosis of germ cell tumors. The presence of hCG in cerebrospinal fluid (CSF) is suggestive of tumor presence. Pure germinomas are associated with low hCG concentrations in both serum and CSF. A subset of nongerminomatous germ cell tumors contain syncytiotrophoblastic giant cells. These tumors are associated with moderately increased hCG concentrations (<1000 IU/L) in the serum and/or CSF, and the survival rate in patients suffering these tumors is worse than that of patients with pure germinomas. In contrast, choriocarcinomas, another subset of nongerminomatous germ cell tumors, are associated with very high hCG concentrations (>1000 IU/L) in both serum and CSF. Quantification of the hCG in CSF can be important in guiding treatment and monitoring response to treatment of these tumors.

The combination of the specific antibodies used in the Roche Beta hCG immunoassay recognize the holo-hormone, "nicked" forms of hCG, the beta-core fragment, and the free beta-subunit.

Reference Values

< or =1.0 IU/L

Interpretation

Elevated levels of human chorionic gonadotropin in spinal fluid indicate the probable presence of central nervous system metastases or recurrence of tumor in patients with germ cell tumors, including patients with testicular cancer or choriocarcinoma.

Cautions

In pregnancy, elevations of human chorionic gonadotropin (hCG) in cerebrospinal fluid (CSF) may be observed due to blood contamination during CSF collection.

In rare cases, some individuals can develop antibodies to mouse or other animal antibodies (often referred to as human anti-mouse antibodies [HAMA] or heterophile antibodies), which may cause interference in some immunoassays. The

presence of antibodies to streptavidin or ruthenium can also rarely occur and may also interfere in this assay. Caution should be used in interpretation of results and the laboratory should be alerted if the result does not correlate with the clinical presentation.

Values obtained with different assay methods or kits may be different and cannot be used interchangeably.

Test results cannot be interpreted as absolute evidence for the presence or absence of malignant disease.

Measurement of hCG in CSF should not be relied upon exclusively to determine the presence of central nervous system metastases in patients with germ cell tumors.

Clinical Reference

1. Tian C, Shi Q, Xiao G, et al. CSF and serum hCG in patients without gestational and neoplastic hCG-secretion. Scand J Clin Lab Invest. 2011;71(4):264-268
2. Tian C, Shi Q, Pu C, et al. Re-evaluation of the significance of cerebrospinal fluid human chorionic gonadotropin in detecting intracranial ectopic germinomas. J Clin Neurosci. 2011;18(2):223-226
3. Gonzalez-Sanchez V, Moreno-Perez O, Sanchez Pellicer PS, et al. Validation of the human chorionic gonadotropin immunoassay in cerebrospinal fluid for the diagnostic work-up of neurohypophyseal germinomas. Ann Clin Biochem. 2011;48(Pt 5):433-437
4. Hu Y, Ni J, Zhang H, et al. An immunoassay for human chorionic gonadotropin in cerebrospinal fluid: validation of a modified-approved method for accreditation by the College of American Pathologists. J Lab Physicians. 2021;14(1):11-15. doi:10.1055/s-0041-1733817.
5. Zhang H, Zhang P, Fan J, et al. Determining an optimal cutoff of serum beta-human chorionic gonadotropin for assisting the diagnosis of intracranial germinomas. PLoS One. 2016;11(1):e0147023. doi:10.1371/journal.pone.0147023

Performance

Method Description

The Roche human chorionic gonadotropin (hCG) assay is a 2-site immunometric sandwich assay using electrochemiluminescence detection. Patient specimen, biotinylated monoclonal hCG-specific antibody, and monoclonal hCG-specific antibody labeled with a ruthenium react to form a complex. Streptavidin-coated microparticles act as the solid phase to which the complex becomes bound. Voltage is applied to the electrode inducing a chemiluminescent emission from the ruthenium, which is then measured against a calibration curve to determine the amount of hCG in the patient specimen.(Package insert: Elecsys HCG+B. Roche Diagnostics; V1.0. 05/2024)

PDF Report

No

Day(s) Performed

Monday through Saturday

Report Available

1 to 3 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
84702

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
BHSF	Chorionic Gonad Beta-Subunit QN,CSF	14041-8

Result ID	Test Result Name	Result LOINC® Value
BHSF	Chorionic Gonad Beta-Subunit QN,CSF	14041-8