MAYO CLINIC LABORATORIES

Test Definition: LASF1

Lactic Acid, Spinal Fluid

Overview

Useful For

Aid in differentiating between bacterial and viral meningitis

Aid in identifying increased anaerobic glycolysis or hypoxia associated with bacterial meningitis, cerebral infarction, cerebral arteriosclerosis, intracranial hemorrhage, hydrocephalus, traumatic brain injury, cerebral edema, epilepsy, and inborn errors of metabolism

Method Name

Colorimetric

NY State Available

Yes

Specimen

Specimen Type

CSF

Specimen Required

Specimen Type: Spinal fluid
Container/Tube: Sterile container
Specimen Volume: 1 mL
Collection Instructions: Centrifuge to remove any cellular material.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Ambient	3 hours	
	Refrigerated	24 hours	
	Frozen (preferred)	60 days	

Clinical & Interpretive

Clinical Information

Anaerobic glycolysis markedly increases lactate concentrations. Lactate concentrations in cerebrospinal fluid (CSF) are increased in the presence of cerebral glycolysis or hypoxia associated with bacterial meningitis, cerebral infarction, cerebral arteriosclerosis, intracranial hemorrhage, hydrocephalus, traumatic brain injury, cerebral edema, epilepsy, and inborn errors of metabolism. Lactate found in CSF is predominantly produced by central nervous system anaerobic glycolysis and is independent of blood lactate. Lactate measurement in CSF has been proposed as a test to differentiate bacterial from viral meningitis.

Reference Values

0-2 days: 1.1-6.7 mmol/L
3-10 days: 1.1-4.4 mmol/L
11 days-17 years: 1.1-2.8 mmol/L
>17 years: 1.1-2.4 mmol/L

Interpretation

In addition to reference intervals, published meta-analysis of 33 studies concluded concentrations greater than 3.9 mmol/L are suggestive of bacterial meningitis, with lower concentrations suggestive of viral meningitis.(1)

Cautions

Cerebrospinal fluid (CSF) lactate concentrations should be interpreted in conjunction with clinical findings and other laboratory results.

CSF lactate concentrations decrease after treatment with antibiotics; therefore, specimens should be collected prior to initiation of antibiotics in order to differentiate bacterial from aseptic meningitis.

Clinical Reference

1. Sakushima K, Hayashino Y, Kawaguchi T, et al: Diagnostic accuracy of cerebrospinal fluid lactate for differentiating bacterial meningitis from aseptic meningitis: A meta-analysis. J Infect. 2011;62:255-262
2. Zhang W, Natowicz MR: Cerebrospinal fluid lactate and pyruvate concentrations and their ratio. Clin Biochem. 2013;46:694-697

Performance

Method Description

Lactate concentration is determined using an enzymatic colorimetric method. L-lactate is oxidized to pyruvate by the specific enzyme lactate oxidase. Peroxidase is used to generate a colored dye using the hydrogen peroxide generated in the first reaction. The intensity of the color formed is directly proportional to the L-lactate concentration. It is determined by measuring the increase in absorbance.(Package insert: Roche Diagnostics Cobas 6000; LACT2 reagent package insert; Indianapolis, IN 46256. 02/2016)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
Same day/1 to 2 days

Specimen Retention Time
1 week

Performing Laboratory Location
Rochester

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 has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
83605

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
LASF1	Lactic Acid, CSF	2520-5

Result ID	Test Result Name	Result LOINC® Value
LASF1	Lactic Acid, CSF	2520-5