Fluctuating Serum Aspartate Aminotransferase Activity in a Complicated Pregnancy

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CASE DESCRIPTION

A 29-year-old para 0 gravida 2 woman with a history of infertility and spontaneous abortion presented to her local hospital at 9 weeks gestation with severe nausea and vomiting. Symptoms persisted for 10 weeks, leading to the diagnosis of hyperemesis gravidarum and treatment with intravenous fluids (3 times/week) and Zofran. At 8 weeks gestation, laboratory tests were unremarkable with the exception of increased aspartate aminotransferase (AST) measured at a regional reference laboratory [105 U/L; reference interval (RI), 10–40 U/L]. AST continued to be monitored at the same laboratory, peaking at 132 U/L (9 weeks gestation) and gradually declining to 38 U/L by 19 weeks gestation. By 20 weeks gestation, the symptoms of hyperemesis gravidarum resolved. At 32 weeks gestation the patient returned to the hospital with significant right upper quadrant (RUQ) pain. Serum AST, measured this time at the local hospital laboratory, was markedly increased [336 U/L (RI, 14–36 U/L)], whereas alanine aminotransferase (ALT; EC 2.6.1.2), γ-glutamyltransferase, alkaline phosphatase, and bile acids were within reference intervals. RUQ ultrasound findings were unremarkable. Symptoms persisted 1 week later (33 weeks gestation) and the AST activity measured at the local hospital laboratory remained increased (311 U/L). However, a paired sample evaluated at the regional reference laboratory indicated that AST activity was within the reference interval (17 U/L). All other laboratory values were consistent between the regional reference laboratory and the local hospital laboratory (data not shown). For the next 3 weeks (33–36 weeks gestation) AST was monitored at the regional reference laboratory and the AST results were within reference intervals (16 U/L, 15 U/L, and 25 U/L). By 36 weeks gestation the RUQ pain was continuous and the patient's liver enzymes were closely monitored at the local hospital laboratory, where AST activity was again increased (312 U/L, 309 U/L, and 294 U/L). A second RUQ ultrasound was performed and was unremarkable. At this time, bile acids were mildly increased [17 μmol/L (RI, <10 μmol/L)], but other liver and pancreatic enzymes tested were within reference intervals. All things considered, the physician and the patient agreed on an elective cesarean delivery at 37 weeks gestation. Following an uneventful delivery, serum AST remained increased; hepatitis serology was negative. Additional ultrasound imaging results of the gall bladder, pancreas, and liver were normal.

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Questions to Consider
• What is the differential diagnosis in a patient with increased serum AST activity and normal serum ALT activity?
• What differences between AST assays could account for the observed differences in AST results?
• What additional laboratory tests could be performed to help determine the source of the different AST assay results?

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the October 2015 issue of *Clinical Chemistry*. To view the case and comments online, go to http://www.clinchem.org/content/vol61/issue10 and follow the link to the Clinical Case Study and Commentaries.

Educational Centers

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