Post-Op Jaundice

Anesthetic Pearls: Anesthetic Implications and Causes of Post-Operative Jaundice

Post-operative jaundice is occasionally encountered in surgical patients. For patients who have undergone anesthesia, suggestions of anesthetic-related liver toxicity may arise and we must be prepared to appropriately investigate this disorder by incorporating a pertinent physical examination along with a review of the anesthetic record and ordering the appropriate laboratory tests.

Etiologies of Post-Operative Jaundice

1. Cholestasis (most common)
2. Pre-op events causing liver ischemia (trauma, shock, sepsis) or preexisting liver disease
3. Drugs: catecholamines / sympathomimetics leading to vasoconstriction and hepatic ischemia
4. Massive transfusion (metabolism of bilirubin load)
5. Occult hematomas (resorption of retroperitoneal hematoma)
6. Hemolysis (incompatible blood, autoimmune)
7. Hepatitis (infectious, autoimmune, Halothane)
8. Extra-hepatic abnormalities (CHF, pulmonary failure, renal failure, PE)
9. Benign post-op intrahepatic cholestasis (occurs after extensive / lengthy surgery; complicated by hypotension, hypoxemia, and massive blood transfusion)
10. Halothane hepatitis

If a patient has post-operative jaundice, basic laboratory tests should include: alkaline phosphatase, ALT, AST, total and fractioned bilirubin levels so that the appropriate differential diagnosis can be developed.

Liver Function Tests and Differential Diagnosis

Hepatic Dysfunction	Bilirubin	Transaminase Enzymes	Alkaline Phosphatase	Causes
Pre-Hepatic	Increased, unconjugated	Normal	Normal	Hemolysis, hemotoma resorption, bilirubin overload from whole blood
Intra-Hepatic (hepatocellular)	Increased, conjugated	Markedly increased	Normal to slightly increased (2-3x normal)	Viral, drugs, sepsis, hypoxemia, cirrhosis
Post-Hepatic (cholestatic)	Increased, conjugated	Normal to slightly increased	Markedly increased	Stones, sepsis

Halothane Hepatitis:

Halothane may produce two types of hepatic injury: (1) a mild self-limited post-operative hepatotoxicity characterized by transient increases in ALT and AST concentrations; (2) immune-mediated hepatotoxicity (occurs in 1:22,000-1:35,000 Halothane anesthetics). This type of hepatic injury can lead to hepatic necrosis and death. The proposed mechanism is related to antibody production against liver tissue that has been altered (producing Halothane-induced liver antigens) by a reaction with the trifluoroacetyl metabolite of Halothane. The acetylation of liver proteins changes them from self to "non-self" recognizing and therefore results in the production of antibodies. Research has shown a genetic susceptibility pattern to this type of hepatic injury. The diagnosis of Halothane hepatitis is confirmed with the identification of the appropriate serum antibodies. In the absence of such antibodies, the diagnosis is reached by exclusion of other causes. The best treatment is to avoid repeated exposure to Halothane.

Cholestasis:

Diagnosed by appropriate lab tests (elevated total bilirubin with both indirect and direct bilirubin elevations; Alkaline phosphatase 2 - 3x normal; ALT / AST fairly normal). Clinically seen in critically ill patients who have sepsis, trauma, extensive surgery (must rule out biliary tract disease). The condition usually resolves and has a self-limiting course.