



ANESTHESIA FOR HEPATIC & RENAL DISEASED PATIENTS

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Keys to consider in the patient with hepatic dysfunction

- Hepatic function
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 - 20% of cardiac output
 - Hepatic artery
 - 30% of hepatic blood flow
 - 90% of oxygen deliver
 - Portal vein
 - 70% of hepatic blood flow
 - 10% of oxygen deliver
 - Anesthetics can alter hepatic perfusion by altering blood flow through either the hepatic artery, portal vein, or both
- Diagnosis of hepatic insufficiency
 - Ascites and distended abdomen
 - Enlarged liver
 - Depression
 - Seizures
 - Weight loss
 - Jaundice
 - Laboratory analysis
 - "liver" enzymes
 - increased bleeding time
 - bile acids
- The hepatic dysfunction patients may have one or all of the following conditions:
 - Hypoproteinemia
 - Hypoglycemia
 - Bleeding problem
 - Slow to metabolize anesthetics
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Anesthetic management of hepatic dysfunction patients

<i>Potential problems</i>	<i>Management</i>
Low hepatic blood flow Prolonged recovery from	<ul style="list-style-type: none">• Avoid deep anesthesia• Maintain blood volume and blood pressure• Monitoring oxygenation and prevent hypoxemia by administering 100% oxygen

C. Opioids (morphine, hydromorphone, oxymorphone, butorphanol, fentanyl)

- Have no direct effect on the kidney.
- Stimulate ADH release and may produce transient oliguria, especially at high dose.
- Cause urinary retention due to increased tone of vesicle sphincter

D. Dissociative agents (ketamine, tiletamine)

- No direct effect on the kidney
- Sympathetic tone - cause a transitory decrease in renal blood flow.
- Cats eliminate ketamine predominantly unchanged through renal excretion.

E. Inhalation anesthetics

- Methoxyflurane:
 - Reduction of cardiac output, which would reduce renal blood flow.
 - Fluoride ion is released during the hepatic biotransformation.
 - Fluoride ion can produce proximal renal tubular necrosis.
 - Human >>> animals.
 - Fluoride induced nephrotoxicity
 - polyuria
 - hypernatremia
 - hyperosmolarity
 - increased plasma creatinine
 - inability to concentrate urine
 - Due to its nephrotoxicity this product was withdrawn and no longer in clinical use
- Halothane:
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