Risk Assessment and Perioperative Care for Patients with Renal or Liver Disease

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KEYWORDS

• Acute kidney injury • Cirrhosis • Chronic kidney disease • Hepatitis • Liver disease • Perioperative

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Acute kidney injury (AKI) is a sudden and temporary loss of renal function, whereas chronic kidney disease (CKD) is renal dysfunction for longer than 3 months. End-stage renal disease (ESRD) refers to patients on dialysis.
2. Asymptomatic patients should not be screened for renal disease.
3. The features of renal disease that increase surgical risk are hyperkalemia, volume overload, platelet dysfunction, and anemia.
4. There is no risk calculator for patients with just renal disease but renal disease is accounted for in the Revised Cardiac Risk Index and Gupta Preoperative Cardiac Risk Calculator.
5. There is little information about specific surgeries that are high risk for patients with CKD or ESRD. There is a high risk of AKI after cardiac surgery.
6. A complete history with focus on past renal issues and physical examination is required for patients with CKD or ESRD. Basic laboratory tests are recommended and cardiac screening should be performed.
7. For the preoperative care of patients with CKD or ESRD, medications for other chronic conditions should be adjusted and dialysis should be arranged, if indicated, the day before surgery.

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Disclosures: The authors have no financial disclosures to make, beyond employment at the University of Washington.

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Hosp Med Clin 5 (2016) 205–223
http://dx.doi.org/10.1016/j.ehmc.2015.11.009
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8. In the postoperative care of patients with renal disease, avoid nephrotoxic agents, maintain adequate blood pressure, monitor for anemia, and dose adjust medications for renal dysfunction.
9. There are several risk factors that increase the risk of developing AKI, including diabetes, peripheral vascular disease, and length of surgery.
10. Common causes of postoperative AKI include volume shifts and contrast toxicity.
11. In addition to a full history and physical focusing on volume status, urinary tests and complete blood count should be obtained for postoperative AKI.
12. Prerenal AKI should be managed with fluids. In all cases of drug-induced AKI, the causative agent should be stopped.
13. Before undergoing surgery, patients should be screened by history and physical, including questions about risk factors for liver disease, and signs and symptoms of liver disease. Laboratory screening of asymptomatic patients who do not have risk factors for liver disease may not be cost-effective.
14. Increased cardiac index, decreased systemic vascular resistance, impaired reticuloendothelial cell function, poor hepatic metabolism of medications, impaired synthesis of clotting factors, portal hypertension (with ascites and/or varices), and other features of liver disease increase the risk for complications of surgery.
15. Acute viral hepatitis carries a 9.5% to 15% operative mortality, and acute alcoholic hepatitis carries a 58% to 100% operative mortality.
16. The surgeries that carry the highest risk for patients with liver disease are:
    a. Emergency or trauma surgery
    b. Surgery involving significant blood loss
    c. Cardiac surgery
    d. Open abdominal surgery
    e. Surgery involving hepatic resection
17. For preoperative evaluation, consider referral to a hepatologist if the cause of a patient's liver disease is unknown; otherwise, evaluate the patient's history of liver-related complications, severity of portal hypertension, current medication regimen, volume status, and nutritional status.
18. The scoring systems that are used to risk stratify patients with cirrhosis are:
    a. Child-Pugh classification
    b. Model for End-stage Liver Disease (MELD)
    c. Mayo Model
19. Child-Pugh class C cirrhosis or MELD greater than 14 and severe complications of liver disease are contraindications to surgery for patients with liver disease.
20. The following recommendations should be made for the perioperative care of patients with liver disease who proceed to surgery:
    a. Delay elective surgery until after liver transplantation, or suggest a less invasive option.
    b. Optimize volume status, ascites, and coagulopathy; consider transjugular intrahepatic portosystemic shunt, recognizing that it may worsen encephalopathy.
    c. Monitor postoperatively for decompensation of liver disease.

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