

Cardiomyopathy, Alcoholic

Risk

- Incidence in USA: 15–20 million chronic heavy ethanol users.
- As much as 50% of dilated cardiomyopathy may be ethanol-related.
- Population at risk: Unclear; likely includes chronic ethanol users with at least 90 g of daily ETOH for at least 5 y (1 standard drink = 12 g ETOH).
- Gender: Male predominance.

Perioperative Risks

- Alcohol withdrawal
- CHF
- Dysrhythmias common: AFIB, PAC, PVC
- Hypomagnesemia and hypokalemia common

Worry About

- Myocardial ischemia: Supply < demand (CAD rare).
- Abnormal systolic and diastolic function.
- Chronic alcohol use alters myocardial response to inotropes, especially epinephrine.
- Alcohol withdrawal symptoms.

Overview

- Insidious onset; Sx uncommon unless severely stressed until late in course.
- Dilated cardiomyopathy: Ventricular hypertrophy early, chamber dilation later.
- Low-output cardiac failure (as compared with high-output failure in cirrhosis and beriberi).
- Malnutrition often coexists.

Etiology

- Direct myocardial damage by ethanol and its metabolites
- Progressive chamber dilation and ventricular hypertrophy; microscopic fibrinoid deposition
- Possible intracellular calcium dysregulation
- Possible muscle excitation-contraction impairment

Usual Treatment

- Abstinence: Ventricular function improves markedly after abstinence.
- Pharmacologic management: Digitalis, diuretics, beta-blockers, and ACE inhibitors.
- Address nutritional deficits, thiamine, folate, and multivitamins.

Assessment Points

| System | Effect | Assessment by Hx | PE | Test |
|--------|---|--|--|-------------------------------|
| HEENT | Plethora, reflux, esophageal varices, friable mucosa | Reflux Sx Hematemesis | Spider angiomata | Endoscopy |
| CV | LV dysfunction CHF Myocardial ischemia Dysrhythmia | Fatigue, orthopnea PND Rare angina Palpitations | Narrow pulse pressure Cardiomegaly S ₃ , S ₄ , murmur JVD, peripheral edema | ECG ECHO Stress testing |
| RESP | Pulm edema | Dyspnea Cough | Rales | CXR |
| GI | Hepatic congestion | Poor appetite, distention | Hepatomegaly | PT, albumin, LFTs |
| HEME | Coagulopathy, Anemia | Abnormal bleeding | Pallor ecchymosis | CBC, PT/PTT, plt |
| RENAL | Decreased renal perfusion | Oliguria | | Cr, FEN _a |
| CNS | Poor perfusion Cerebral atrophy | Confusion | Abn mental status | |
| MS | Proximal muscle weakness Peripheral neuropathy | | Proximal limb weakness and muscle atrophy | |

Key References: George A, Figueredo VM: Alcoholic cardiomyopathy: a review, *J Card Fail* 17(10):844–849, 2011; Fox CJ, Liu H, Kaye AD: The anesthetic implications of alcoholism, *Int Anesthesiol Clin* 49(1):49–65, 2011.

Perioperative Implications

Preoperative Preparation

- Pharmacologic management of CHF.
- Correct electrolytes.
- Consider neuraxial anesthesia, if appropriate, to reduce afterload.

Monitoring

- ECG with ST-segment analysis.
- Consider arterial pressure cath, pulm artery cath, TEE depending on surgery, and ventricular function.

Airway

- NG tube placement risky in presence of varices

Preinduction/Induction

- Pt may have intravascular volume depletion.

Maintenance

- Avoid tachycardia and increased sympathetic activity.
- Avoid depression of myocardial contractility.
- Prevent increases in afterload to maintain cardiac output.

Extubation

- Routine

Postoperative Period

- Consider monitoring in critical care unit.
- Observe for ethanol withdrawal.

- Effective pain management avoids increases in SVR and heart rate.

Adjuvants

- Multivitamins, thiamine, B₁₂, and folate.
- Consider benzodiazepines, α₂ agonists for prophylaxis against withdrawal symptoms.
- Volume of distribution may be increased; consider adjusting drug dosages.

Anticipated Problems/Concerns

- Postop ventricular dysfunction and CHF can occur.
- Alcohol withdrawal symptoms can develop.

Cardiomyopathy, Dilated

Andrew Oken

Risk

- Accounts for approximately ~10,000 deaths and ~46,000 hospitalizations per year in USA; idiopathic DCM is one of the primary indications for cardiac transplantation.
- Often ages ~20–60 y old but can affect older and younger pts as well.
- African-Americans > Caucasians; males > females

Perioperative Risks

- CHF and dysrhythmias and hemodynamic instability.

- Morbidity and mortality directly related to severity of cardiomyopathy and complexity of surgery.

Worry About

- Compromised myocardial function and hemodynamic instability.
- Management strategies periop include pharmacologic and mechanical support options.
- Dysrhythmias and management of CRT/ICD devices..
- Meticulous assessment and management of periop volume status.

Overview

- DCM is characterized by myocyte death and fibrosis, leading to impaired myocardial contraction, chamber dilatation, and LV and/or RV failure.
- Dilation and diminished systolic function (EF <40%) lead to heart failure, often manifesting initially with dysrhythmias or sudden cardiac death.
- Presentation and clinical course varies tremendously, but pts are commonly found to have symptoms of heart failure with diminished exercise tolerance and dyspnea, orthopnea, and PND.