Anticipated Problems/Concerns

- Treatment agents associated with significant side effects:
  - First-generation antipsychotics (haloperidol): Greater incidence of extrapyramidal side effects, neuroleptic malignant syndrome, QT prolongation
  - Second-generation antipsychotics (olanzapine, risperidone): Lesser incidence of extrapyramidal side effects, more sedation, neuroleptic malignant syndrome, increased risk of stroke/death in elderly with dementia
- Psychologic stress on family members and caregivers should not be underestimated

Depression, Unipolar

Ashish C. Sinha

Risk

- Affects 2–4% of population; equal occurrence by gender; highest in 25–44 y.
- Lifetime risk 10–25% for women and 5–12% for men; at any point in time, 5–9% women and 2–3% of men suffer from this.
- Approximately 15% of pts with major depression commit suicide. Older than 55 y has fourfold increase in death rate.

Perioperative Risks

- Most periop issues arise from interactions between antidepressant medications and anesthetic agents. Withdrawal of antidepression medications can increase risk of suicide.

Overview

- Depression is the most common psychiatric disorder.
- Dx is clinical and based on persistent presence of 2 wk of symptoms.
- Distinguished from normal sadness and grief by severity and duration of disease.
- Medication and psychotherapy combination most effective; majority of pts recover.

Etiology

- Unknown pathophysiology, but suspect abnormalities of amine neurotransmitter (serotonin, dopamine, and norepinephrine) pathway
- Multifactorial; familial pattern thought to exist

Usual Treatment

- SSRI: Works by blocking reuptake of serotonin at presynaptic membranes with little effect on adrenergic, cholinergic, histaminergic, or other neurochemical system. Associated with fewer side effects.
- Tricyclic antidepressant: Inhibit synaptic reuptake of norepinephrine and serotonin. Also affect other neurochemical systems, including histaminergic and cholinergic systems, resulting in side effects, such as postural hypotension, prolonged QRS intervals (>0.1), cardiac dysrhythmias, and urinary retention.
- MAOI: Prevents breakdown of catecholamine and serotonin. Orthostatic hypotension is most common side effect observed. Significant systemic Htn associated with ingesting food containing tyramine or sympathomimetic drugs.
- ECT for pts who are resistant to antidepressant medications or with medical contraindication to antidepressants.

Assessment Points

System	Effect	Assessment by Hx	PE	Test
HEENT	Dehydration	Dry mouth, blurred vision	Glaucoma, retinal detachment decreased visual acuity	Fundoscopic exam
CV	AV conduction delays, bradycardia, tachyarrhythmia, hypertensive crisis, hypotension	Angina, symptoms of CHF, need for cardiac pacemaker, thrombophlebitis	Volume status, BP, S_3 gallop	12-lead ECG (± stress test), ECHO
RESP	Resp depression	CHF, severe pulmonary disease	S_3, rales, wheezing	CXR, ABGs
GI	Delayed gastric emptying	Reflux		Gastroendoscopy
ENDO	Variable catecholamine levels	Symptoms suggestive of pheochromocytoma	Unexplained severe Htn	VMA levels
RENAL	Urinary retention	Difficulty urinating		
CNS	MS, neuroleptic malignant syndrome, seizures, coma, ALS, CJD Alzheimer disease	Recent CVA, intracranial surgery, intracranial mass lesion	Neurologic deficits, symptoms of increase ICP	CT, MRI, neurologic exam, toxicology screen
MS AND COLLAGEN DISORDERS		Severe osteoporosis, major fractures, RA, SLE	Fractures, joint pain, and limited mobility	Skeletal x-rays, MRI

Key References: Sullivan PF, Neale MC, Kendler KS: Genetic epidemiology of major depression: review and meta-analysis, *Am J Psychiatry* 157(10):1552–1562, 2000; Uppal V, Dourish J, Macfarlane A: Anaesthesia for electroconvulsive therapy, *Contin Educ Anaesth Crit Care Pain* 10(6):192–196, 2010.

Perioperative Implications

- Serotonin syndrome
  - Potentially life-threatening drug reaction from interactions between SSRIs, atypical and cyclic antidepressants, MAOIs, opiates, and antibiotics, (e.g., phenelzine and meperidine, phenelzine and SSRIs, linezolid and citalopram)
  - Symptoms include agitation, delirium, autonomic hyperactivity, hyperreflexia, clonus, and hyperthermia
  - Treatment involves discontinuing the suspected agent(s), supportive measures, and control of autonomic instability, excess muscle activity, and hyperthermia.
  - In mild cases lorazepam, propranolol, or cyproheptadine (a 5-HT antagonist available only in oral form that binds to serotonin receptors) can be administered
- Fluoxetine
  - Potent hepatic cytochrome P-450 inhibitor, which increases plasma concentration of drugs that depends on P-450 for clearance.
  - Fluoxetine may increase the concentration of tricyclic antidepressants by twofold to fivefold.
  - Some cardiac antidysrhythmic and beta-blockers may also be potentiated as a result.
- Tricyclics
  - Anticholinergic effect causes CV abnormalities, such as orthostatic hypotension and cardiac dysrhythmias.
  - Due to increased availability of neurotransmitters in the CNS, anesthetic requirement may be increased. Likewise, increased availability of norepinephrine may cause exaggerated BP response in reaction to indirect-acting vasopressor, such as ephedrine.
  - Acute treatment with tricyclics (first 2–3 wk) is associated with potential significant Htn, whereas long-term treatment is associated with downregulation of receptors.
  - Tachydysrhythmias have been observed following administration of pancuronium, ketamine, meperidine, or local anesthetics containing epinephrine to pts who are also on imipramine.
- MAOIs
  - Anesthetic requirement may be increased due to increased concentration of norepinephrine in the CNS.
  - Serotonin syndrome from combining MAOI and meperidine has been noted.
  - Current belief is to continue MAOIs during the periop period, despite previous thought of discontinuing MAOIs 14 d prior to elective surgery.

- Benzodiazepine (midazolam) may be used to treat preop anxiety.
- Ketamine, a sympathetic stimulant, should be avoided.
- Serum cholinesterase activity may be decreased in pts on phenelzine, so the dose of succinylcholine may need to be reduced.
- The addition of epinephrine to local anesthetic solutions should probably be avoided.
- If hypotension develops, direct-acting drugs, such as phenylephrine, are preferred. The dose should also be decreased to minimize the likelihood of an exaggerated hypertensive response.

Anticipated Problems/Concerns

- In periop period, general rule is to try to continue antidepressant therapy.
- Be aware of potential interactions between anesthetic agents and antidepressants.
- Pts should be monitored for signs of serotonin syndrome.

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Dermatomyositis

Michael F. Roizen | Jeffrey D. Roizen

Risk

- Prevalence in USA: 3000–10,000.
- Group, demographics with highest prevalence include females, 2:1 relative to men, with a peak onset between 30–60 y of age.

Perioperative Risks

- Increased risk of respiratory failure and infections postop

Worry About

- Most case reports absolutely avoid depolarizing muscle relaxants and are careful with medications that have effects on muscle strength.
- Monitor muscle relaxant dosing and recovery.
- Valvular heart disease and cardiomyopathy: Cardiac muscle, though not severely involved, shows changes similar to skeletal muscles. Clinical manifestations are rare.

Overview

- Relatively rare diffuse connective tissue disorder of uncertain etiology characterized by idiopathic inflammatory myopathy with muscle involvement and weakness muscle and connective tissue involvement of skin and other organs. Valvular heart disease increases the risk of periop adverse cardiac events.
- Diagnosis is based on the clinical picture of muscle weakness and skin rash, myelography, raised serum CPK levels, and muscle biopsy.
- Respiratory system: Aspiration pneumonia may occur due to weakness of the muscle involved in swallowing. Progressive weakness of the intercostal and diaphragmatic muscles may result in respiratory insufficiency. Lung involvement may occur from the connective tissue disorder itself, which results in patchy infiltrates throughout both lungs, interstitial pneumonia, or fibrosis. Carcinoma of the bronchus or lung parenchyma is associated.

Etiology

- The lead theory regarding dermatomyositis involves a genetic predisposition to viral or immune destruction of muscles by viruses or other infectious agents. Dermatomyositis is considered a connective tissue diseases in the same category as lupus erythematosus or systemic sclerosis.

Usual Treatment

- Prednisone to control weakness and pain
- Various agents to control rash and calcinosis in skin

Assessment Points

System	Effect	Assessment by Hx	PE	Test
DERM	Characteristic rash Raynaud phenomenon	Treatment with diltiazem or colchicine to reduce calcinosis Hydroxychloroquine may reduce the photosensitive rash Raynaud phenomenon may present.	Classic purple rash on eyelids and over bony prominences Children's skin can become thick and hard; rash appears on the back, knuckles, chest, shoulders, neck, and face.	Biopsy in past—look at results
HEENT	Possible regurgitation and swallowing difficulties	Symptoms of regurgitation	Test of swallowing with water	Usually not needed, neck x-rays in extension; GI swallow for motility
CV	Valvular heart disease Cardiac muscle, though not severely involved, shows changes similar to skeletal muscles. Clinical manifestations are rare, but heart failure and conduction defects reported.	Poor exercise tolerance Angina CHF symptoms	Two-flight walk Chest exam for signs of CHF BP lying and standing	ECG, ECHO for valvular disease
RESP	Decreased lung elastance; decreased FEV; decreased FVC Aspiration pneumonia due to weakness of the muscle involved in swallowing Potential progressive weakness of the intercostal and diaphragmatic muscles results in respiratory insufficiency.	Poor exercise tolerance		Generally not needed
GI	Esophageal motility disorders, gastroparesis, GI ulcers and infections	Early satiety		
RENAL	Nephropathy, if treatment for many years			BUN/Cr
ENDO	Insulin resistance from high dose prednisone treatment			FBS, lytes
CNS	Fatigue and weakness	Early satiety, impotence, N/V, orthostatic symptoms		Changes related to degree of type 2 diabetes from therapy
PNS	Proximal muscle weakness	Shoulder-girdle weakness	PNS exam, esp. if regional planned, which is recommended by most case reports	Abnormal muscle biopsy and MRI of proximal muscles
MS	Impaired mobility and strength	Muscle strength	Weakness, inability to get out of chair by self, decreased ROM of joints	Elevated muscle enzyme levels

Key References: Gunusen I, Karaman S, Nemli S, Firat V: Anesthetic management for cesarean delivery in a pregnant woman with polymyositis: a case report and review of literature, *Cases J* 2:9107, 2009; Shrestha GS, Aryal D: Anaesthetic management of a patient with dermatomyositis and valvular heart disease, *Kathmandu Univ Med J* 10(38):100–102, 2012.

Perioperative Implications

- May exhibit signs of some paraneoplastic disorder (e.g., polyneuropathy, subacute cerebellar degeneration, multifocal neuroencephalopathy, myasthenic syndrome).
- If on steroids for treatment, may benefit from periop steroids.
- If given cytotoxic drugs, hematologic status needs examination.

Preoperative Preparation

- Administer metoclopramide (10 mg/70 kg) in pts with esophageal motility problem or gastroparesis.
- Assess myocardial and volume status.