

Peri-Operative Bradycardia

Anesthetic Pearls: Anesthetic Implications and Management of Peri-Op Bradycardia

Definition:

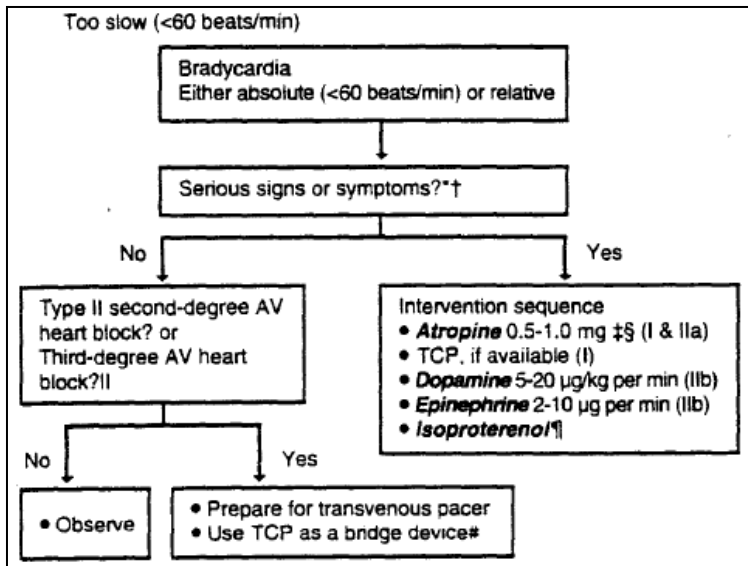
Heart Rate less than 60 bpm (adults)
Does NOT require treatment unless associated with hemodynamic instability.



Etiology:

1. Anesthetic overdose
2. High epidural or spinal anesthesia (blocks cardio-accelerator fibers between T1-T4)
3. Manipulation of bowel or peritoneum
4. Hypothermia (less than 33^o C)
5. Severe hypoxemia
6. Dilatation of the cervix
7. Oculocardiac reflex (pressure on eye, traction on extraocular muscles, or injection into retrobulbar space)
8. ECT treatments
9. Laryngoscopy (especially in neonates)
10. Underlying heart disease (sick sinus syndrome, ischemic heart disease, 2nd or 3rd degree heart block)
11. Drugs (succinylcholine, vecuronium, atracurium, neostigmine, beta blockers, halothane, high dose opioids)
12. Increased ICP
13. Diabetic autonomic neuropathy

Treatment Algorithm for Bradycardia:



*Serious signs or symptoms must be related to the slow rate.

Clinical manifestations include:

symptoms (chest pain, shortness of breath, decreased level of consciousness) and

signs (low BP, shock, pulmonary congestion, CHF, acute MI).

†Do not delay TCP while awaiting IV access or for *atropine* to take effect if patient is symptomatic.

‡Denervated transplanted hearts will not respond to *atropine*. Go at once to pacing, *catecholamine* infusion, or both.

§*Atropine* should be given in repeat doses in 3-5 min up to total of 0.04 mg/kg. Consider shorter dosing intervals in severe clinical conditions.

It has been suggested that atropine should be used with caution in atrioventricular (AV) block at the His-Purkinje level (type II AV block and new third-degree block with wide QRS complexes) (Class IIb).

¶Never treat third-degree heart block plus ventricular escape beats with *lidocaine*.

¶¶*Isoproterenol* should be used, if at all, with extreme caution. At low doses it is Class IIb (possibly helpful); at higher doses it is Class III (harmful).

#Verify patient tolerance and mechanical capture. Use analgesia and sedation as needed.