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Interventional Pain Management Including Nerve Blocks and Lesioning

- I. Know the anatomy of critical peripheral and central nervous system (CNS) regions as it relates to analgesic nerve blocks (Cousins and Bromage 1988; Hogan 1991; Abram and Boas 1992; Brockway and Chambers 2003; Waldman and Winnie 1996).
 - A. Spine
 1. Bony vertebral column
 2. Spinal cord, meninges, nerve roots, dorsal root ganglion
 - B. Peripheral nervous system
 1. Brachial, femoral, and sacral plexuses
 2. Cranial nerves
 3. Peripheral nerves of spinal origin: emphasis on nerves that are commonly involved in entrapment neuropathies, e.g., lateral femoral cutaneous, occipital, ulnar, median
 - C. Autonomic nervous system
 1. Sympathetic efferent system
 - a. Cells or origin in spinal cord
 - b. Rami communicantes
 - c. Sympathetic chain
 - d. Postganglionics
 2. Visceral (sympathetic) afferent system
 - a. Innervation of visceral structures
 - b. Sympathetic chain afferents from somatic structures
- II. Be familiar with the general principles of the pharmacology and use of drugs used for nerve blocks.
 - A. Local anesthetics (Covino 1988; Charlton 2003)
 1. Neural blocking mechanisms
 2. Be aware of systemic effects:
 - a. CNS toxic effects
 - b. Nonconvulsant effects (e.g., analgesia)
 - c. Cardiotoxic effects
 3. Pharmacokinetics (Tucker and Mather 1988)
 - a. Peripheral nerve block
 - b. Subarachnoid block
 - c. Epidural block
 - B. Know the pharmacology of opioids as they relate to regional analgesia (Cousins et al. 1988a; Dickinson 1991; McQuay 1991; Ready 2001).
 1. Receptor types and function

2. Spinal and brain effects
 3. Pharmacokinetics of spinal intrathecal and epidural application
 - C. Know commonly used neurolytic agents (Myers and Katz 1988; Jain and Gupta 1996).
 1. Alcohol, phenol, botulinus toxin (Arnon 2001)
 2. Pathological (neurotoxic) effects
 - a. Blood vessels
 - b. Spinal cord
 3. Know the complications of neurolytic therapy (Butler and Charlton 2001).
 - a. Denervation dysesthesia
 - b. Peripheral neuralgia
 - D. Know about the use of locally injected corticosteroids (Rowlingson 1994).
 1. Effect on nerve roots, peripheral nerves
 2. Systemic effects
 3. Pharmacokinetics of soluble, “depo” preparations
- III. Know how nerve blocks are used for diagnostic purposes and pain control (Buckley 2001). All practitioners should understand the clinical indications, risks, and complications associated with the use of nerve blocks. All practitioners, including those outside of the field of anesthesiology, should be aware of the treatment of problems that may arise during the performance of these procedures. The patient should have a clear understanding of the reason(s) for the procedure and the likely benefit to be derived. Where there is no evidence base to indicate likely benefit, the patient should be made aware of this.
- A. Myofascial trigger point injection (Travell 1993)
 - B. Common peripheral blocks (Buckley 2001)
 1. Occipital
 2. Lateral femoral cutaneous
 3. Intercostal
 - C. Sympathetic blocks (Abram and Boas 1992; Abram and Haddox 1992)
 1. Lumbar sympathetic
 2. Stellate ganglion
 - D. Epidural steroid injections (National Health and Medical Research Council 1994)
 - E. Celiac plexus block and hypogastric plexus block (Waldman and Winnie 1996)
 - F. Intraspinal opioids
 1. Techniques of catheter placement: intrathecal, epidural (Waldman and Winnie 1996)
 2. Administration techniques
 - a. Bolus
 - b. External infusion
 - c. Subcutaneous post
 - d. Implantable infusion pump
 - G. Intrathecal and epidural neurolytic blocks (Cousins et al. 1988b)
 - H. Phenol motor point block (Halpern and Meelhuysen 1966)
 - I. Cryoneurolysis (Saberski 1996)
 - J. Radiofrequency lesions (Kline 1996)

- IV. Know how to recognize and treat the side effects and complications of nerve blocks (Abram and Hogan 1992; Murphy and O'Keefe 1992).
- A. Spinal and epidural blocks
 - B. Paravertebral somatic and sympathetic blocks
 - C. Peripheral nerve blocks
 - D. Muscle, joint, and bursa injections
 - E. Continuous infusion therapy

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