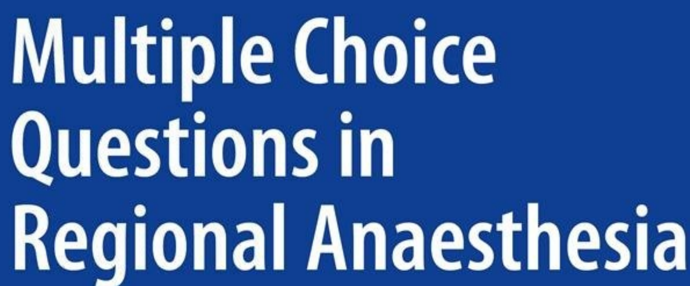
Rajesh Gupta · Dilip Patel



Multiple Choice Questions in Regional Anaesthesia

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Springer

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1 Benefits and Complications

1. The benefits of regional anaesthesia:
   (a) Better quality of analgesia
   (b) Prolonged duration of analgesia
   (c) Other perioperative benefits than analgesia
   (d) Minimal effect on autonomic system
   (e) Decreased hospital stay

2. Regional anaesthesia is known to decrease:
   (a) Blood loss
   (b) Complications after vascular surgery
   (c) Shivering after induction of anaesthesia
   (d) Complications after colon surgery
   (e) Morbidity and mortality associated with general anaesthesia

3. Changes in cardiovascular system seen with pain are:
   (a) Increased catecholamine increase
   (b) Decreased myocardial oxygen demand
   (c) Bradycardia
   (d) Hypertension
   (e) Decreased risk of thrombotic complications

4. All are seen in pulmonary system with pain:
   (a) Increased vital capacity
   (b) Increased functional residual capacity
   (c) Decreased tidal volume
   (d) Increased chest infections
   (e) Impaired cough

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5. Following are seen in stress response to surgery:
   (a) Increased catabolism
   (b) Decreased anabolism
   (c) Decreased sodium and water retention
   (d) Weight loss
   (e) No effect on muscle protein

6. Regional anaesthesia:
   (a) Improves pulmonary function
   (b) Prevents sympathetic activation
   (c) Decreases paralytic ileus following abdominal procedures
   (d) Decreases incidence of thrombotic complications in upper abdominal procedures
   (e) Improves cardiac performance and may even have beneficial effects on the oxygen delivery/demand ratio

7. Endocrine changes in stress response:
   (a) Concentration of all anterior pituitary hormones is increased during surgery.
   (b) Both ACTH and cortisol secretion is increased.
   (c) Growth hormone secretion is related to severity of injury.
   (d) Insulin is anabolic.
   (e) Testosterone concentrations are decreased for several days after surgery.

8. Regional anaesthesia affects endocrine system:
   (a) Prolactin secretion is decreased.
   (b) Sympathetic response to surgery is not blocked.
   (c) Thyroid hormone secretion is not affected.
   (d) Hyperglycaemic response to surgery is not blocked.
   (e) Oxygen consumption is increased after surgery.

9. Modifications of stress response seen with regional anaesthesia:
   (a) Neurogenic stimuli are blocked from surgical area to central nervous system and endocrine system.
   (b) Involves both afferent and efferent neurogenic pathways.
   (c) Hyperglycaemic response is mediated by both afferent and efferent pathways.
   (d) There is a known mechanism for cortical response.
   (e) Efferent sympathetic pathway blockade to liver may be important in pancreatic islet response.

10. Preoperative preparation for regional anaesthesia:
    (a) Written consent is not necessary.
    (b) All complications however minor should be informed during the consent.
    (c) Intravenous sedation can be used for sedation.
    (d) Full investigations are not required as for general anaesthesia.

11. Complications associated with regional anaesthesia can be decreased by:
    (a) Appropriate informed consent
    (b) Physician-patient communication
    (c) Post-operative follow-up visit
    (d) Accurate and meticulous documentation
    (e) Preoperative patient selection

12. All are absolute contraindications for regional anaesthesia:
    (a) Patient refusal
    (b) Lack of nerve stimulator
    (c) Lack of resuscitation facilities
    (d) Coagulopathy
    (e) INR > 2 in ophthalmic procedures

13. Monitoring in regional anaesthesia:
    (a) Needle phobia is seen in 15 % of patients.
    (b) Only ECG is required as a standard.
    (c) Baseline blood pressure should be recorded before starting regional anaesthesia.
    (d) Assistant should observe and aid patient all the time.
    (e) Clinical guidelines for discharge should be met before discharge.

14. Anticoagulants in regional anaesthesia:
    (a) A single dose of warfarin causes prolongation of prothrombin time in 100 % patients.
    (b) Patients with acute thromboembolic disease exhibit heparin resistance.
    (c) Enhanced prothrombin time response is seen in males.
    (d) Fondaparinux has a half-life of 20 h.
    (e) Subcutaneous heparin is safest among anticoagulants in incidence of spinal hematomas.

15. Effects seen with thoracic epidural:
    (a) Loss of ionotropic and chronotropic drive to myocardium.
    (b) Stroke volume and cardiac output are not altered.
    (c) Chest pain is relieved in coronary artery disease and angina pectoris.
    (d) Pulmonary function is improved after cardiac surgery.
    (e) Attenuates mean arterial pressure during laryngoscopy.

16. Spinal hematoma after regional anaesthesia:
    (a) Seen more after epidural anaesthesia than spinal anaesthesia.
    (b) Are symptomatic immediately after surgery.

(c) Cauda equine is relatively immune to compression effects of hematoma.
(d) Is seen more in females.
(e) Spontaneous hematomas seen more with LMWH than thrombolytic therapy.

17. Nerve injuries due to needle trauma in peripheral nerve block:
    (a) Incidence is 1–2 %.
    (b) Most common is axonotmesis.
    (c) Most cases settle by 3 months.
    (d) Mostly is seen due to needle trauma and injection pressure.
    (e) Not seen if performed in awake patients.

18. Nerve injuries due to needle trauma:
    (a) Small-gauge needles are less likely to damage nerves than larger gauge.
    (b) Blunt needles are better than sharp-end needles.
    (c) Sterilising agents and preservatives can cause neurotoxicity.
    (d) Addition of vasoconstrictor to local anaesthetic may enhance the damage caused by an intraneural injection.
    (e) Can be avoided by limiting pressure of injection.

19. Nerve injuries:
    (a) Nerve conduction studies test the function of large sensory and motor nerve fibres.
    (b) EMG is used to evaluate small motor units.
    (c) Brown-Sequard syndrome is a complication of interscalene block.
    (d) Patient positioning is a significant factor in nerve injuries.
    (e) Signs of symptoms of spinal cord compression must be dealt with urgently.

20. Pneumothorax seen with regional anaesthesia:
    (a) Seen more with supraclavicular technique than interscalene.
    (b) The incidence is equal on both the sides.
    (c) Ultrasonography prevents it totally.
    (d) Patient may not become symptomatic until 20 % pneumothorax is present.
    (e) Risk is reduced in vertical techniques.

21. Horner's syndrome includes:
    (a) Ipsilateral miosis
    (b) Ptosis
    (c) Exophthalmos
    (d) Loss of sweating
    (e) Enophthalmos.

22. Phrenic nerve palsy during supraclavicular nerve block:
    (a) Seen in 100 % of patients with interscalene brachial plexus block.
    (b) Is purely a motor nerve.
    (c) Permanent nerve palsy is never seen.
    (d) Decrease in FVC, FEV1 and PEF is seen on lung function tests.
    (e) Advanced pulmonary disease is a contradiction to bilateral supraclavicular techniques.

23. Preoperative assessment for regional anaesthesia:
    (a) Risk of local anaesthetic toxicity is increased in patients with right to left shunts.
    (b) Local anaesthetics should be used cautiously in sick sinus syndrome.
    (c) High spinal anaesthesia can cause anti-peristaltic movements and gastric regurgitation.
    (d) Lignocaine should be avoided in patients with glucose-6-phosphate dehydrogenase deficiency.
    (e) Lidocaine is contraindicated in malignant hyperthermia.

24. Brainstem anaesthesia seen with ophthalmic blocks:
    (a) Symptoms can occur immediately on injection.
    (b) Short globe axial length is a risk factor.
    (c) Diagnosis is by fundoscopic examination.
    (d) Aiming the needle between inferior and lateral rectus can help avoid the complication.
    (e) Incidence is 1:350–1,500 ophthalmic cases.

25. Anticoagulants:
    (a) No increase risk in hematoma is seen if interval of 4 h is given between dose and catheter insertion or removal.
    (b) Dose should be given 6 h after the catheter insertion or removal.
    (c) Infusion if given for more than 14 days should be monitored for heparin-induced thrombocytopenia.
    (d) An interval of 10–12 h would be given after needle placement or catheter removal if low molecular weight heparin is used.
    (e) Enoxaparin can be used for up to 40 mg/day safely.

26. Effects of epidural anaesthesia on cardiorespiratory system:
    (a) FEV1 and FVC are decreased.
    (b) Increase in functional residual capacity.
    (c) Decreased risk of thrombotic complications.
    (d) Increased PO_2.
    (e) Better pain control in cardiac surgery.

27. Pulmonary effects seen with regional anaesthesia:
    (a) Post-operative complications are decreased.
    (b) Lung volumes are altered.
    (c) Both FEV1 and FVC are decreased in interscalene block.
    (d) Paravertebral block improves arterial oxygen saturation and peak expiratory flow rate better than epidural.

28. Effect of regional anaesthesia on renal system:
    (a) Blood flow to kidneys is increased in low thoracic neuraxial anaesthesia.
    (b) Acidemia in chronic renal failure can cause bupivacaine toxicity.
    (c) Hyperkalemia decreases toxicity of bupivacaine.
    (d) Increased risk of toxicity in peripheral nervous system in chronic renal failure.
    (e) Haemodialysis removes lidocaine effectively.

29. Effects seen with regional anaesthesia in renal dysfunction:
    (a) Alpha-1-acid glycoprotein levels increase in uraemia.
    (b) Onset time and duration of anaesthesia is decreased in patients with uraemia.
    (c) Uraemic patients are at higher risk for thrombotic events.
    (d) Both general anaesthesia and regional anaesthesia are equally effective in improving blood flow through AV fistula.
    (e) Dysfunction in platelet structure is seen in uraemia.

30. Regional anaesthesia in hepatic dysfunction:
    (a) Local anaesthetic toxicity is increased.
    (b) Dosages should be increased to cause the same effect.
    (c) Grape juice can increase amide local anaesthetic toxicity.
    (d) Regional anaesthesia has no effect on portal blood flow.
    (e) Drugs inhibiting microsomal enzymes increase toxicity.

31. Regional anaesthesia and endocrine system:
    (a) More risk of ischaemia of nerves in diabetes mellitus.

(b) Nerve stimulator is reliable for electro location of nerves in diabetes mellitus.
(c) Regional anaesthesia ameliorates hypoglycaemic response to surgery.
(d) Double crush syndrome is seen in nerve entrapment.
(e) Higher block heights may be seen in obese patients.

32. Coagulation factors:
   (a) Factor VII has the longest half-life.
   (b) Normal INR means all factors are present in adequate levels.
   (c) A factor level of 40 % is sufficient for haemostasis.
   (d) INR < 1.2 is required for effective haemostasis.
   (e) Usage of garlic decreases factor VII (F).

33. Antiplatelet medications:
   (a) Ticlodipine causes irreversible inhibition of platelets.
   (b) Clopidogrel should be stopped for 14 days prior to regional anaesthesia.
   (c) Abciximab has a duration of 48 h.
   (d) Eptifibatide and tiorfan belong to same category of anticoagulant drugs.
   (e) Ginko is known to inhibit platelet-activating factor.

34. Epidural abscess after dural puncture:
   (a) *Streptococci* is the most common organism.
   (b) Most common cause is epidural catheter.
   (c) Steroid administration protects against the abscess formation.
   (d) Immunocompromised patients are at increased risk.
   (e) Conservative management shows best results.

35. Infections in immunocompromised patients:
    (a) Lidocaine and bupivacaine show dose-related inhibition of microorganisms.
    (b) Opioids inhibit microorganisms more than local anaesthetics.
    (c) Catheter hub accounts for the majority of infections in immunocompromised.
    (d) Bacterial filter effectively prevents infections.
    (e) Multiple catheter placements is a risk factor.

36. Infectious complications in peripheral nerve blocks:
    (a) *S. epidermidis* is the most common organism colonising the catheters.
    (b) Male gender is a risk factor.
    (c) Presence of fever was seen a strong predictor of colonisation.

37. Hypotension in regional anaesthesia:
    (a) Local anaesthetics cause a dose-dependent negative ionotropic effect on cardiac muscle.
    (b) Clonidine causes hypotension by blocking alpha 2 receptors.
    (c) Bezold-Jarisch reflex can contribute to it.
    (d) Interscalene block can cause hypotension in shoulder surgery.
    (e) Elevated body mass index is a risk factor.

38. Cardiac arrest during regional anaesthesia:
    (a) Seen more with spinal anaesthesia than epidural or peripheral nerve block.
    (b) Hip replacement surgery is a known risk factor for cardiac arrest.
    (c) Volume loading prior to spinal can prevent hypotension and cardiac arrest.
    (d) Colloids are better than crystalloids in preventing hypotension-induced cardiac arrest.
    (e) Arrests involved with regional anaesthesia are primarily hypoxic in origin.

39. Toxicity seen with local anaesthetics:
    (a) More seen with R (+) isomer than S (−) isomer.
    (b) Inadequate production of cAMP accounts for refractoriness of bupivacaine CV toxicity to standard resuscitation measures.
    (c) Lidocaine produces arrhythmias more than bupivacaine.
    (d) True allergy to local anaesthetics is most commonly seen with ropivacaine.
    (e) CNS toxicity manifests earlier than CV toxicity.

40. Central nervous system toxicity seen with local anaesthetics:
    (a) Is an outcome of loss of inhibition of excitatory pathways in the CNS.
    (b) Metallic taste is a frequent accompaniment.
    (c) Acidosis is protective against convulsive effects.
    (d) CC/CNS ratio is least for ropivacaine.
    (e) Origin of seizures is from amygdale.

41. Epinephrine used as an adjuvant:
    (a) Extends block duration, limits systemic uptake, supplements analgesic effect, and acts as an indicator of intravascular injection.
    (b) Can cause toxicity to peripheral nerves in patients with diabetes or chemotherapy.
    (c) Local anaesthetics and epinephrine have no effect on peripheral nerve blood flow.
    (d) Epidural usage can increase cardiac output.
    (e) Can aggravate local anaesthetic-induced neuraxial or peripheral nerve injury.

42. Adjuvants in regional anaesthesia:
    (a) Clonidine inhibits firing of wide dynamic range neurons in spinal dorsal column.
    (b) Neostigmine works supraspinally if given intrathecal.

(c) Ketamine is a NMDA receptor antagonist.
(d) Magnesium prolongs fentanyl intrathecal analgesia.
(e) Midazolam has minimal neurotoxicity if given intrathecal.

43. Transient neurologic symptoms after neuraxial block:
(a) Symptoms begin as soon as local anaesthetic is injected.
(b) Pain is mostly seen in the back.
(c) Symptoms can take up to 4 days to resolve.
(d) Diagnosis is by neurologic findings on examination.
(e) Daily functional activities are not hampered.

44. Peripheral nerve injury:
(a) Wallerian degeneration occurs proximally to injury.
(b) Retrograde degeneration occurs proximally to the site of injury.
(c) Swelling of cytoplasm indicates severe injury.
(d) Nissl substance is an indicator of recovery.
(e) Axonal regeneration takes about 1 week to start.

45. Risk factors for peripheral nerve injury:
(a) For "double crush injury", the second insult should be along the peripheral nerve trunk.
(b) There are no known surgical risk factors.
(c) Most common surgical risk factor is direct surgical trauma.
(d) Most injuries causing motor deficit have a surgical cause.
(e) Local anaesthetics can cause neural damage.

46. Management of post-operative nerve dysfunction:
(a) Baseline function should be established with electrophysiological testing.

(b) Early surgical intervention is indicated.
(c) Most of the injuries are complete or partial transections.
(d) No evidence of recovery on clinical examination is an indication for surgery.
(e) Focal lesions should be explored at 2–3 months.

47. Myotoxicity:
(a) LAs damage the whole of the muscle cell causing neurotoxicity.
(b) Sarcoplasmic reticulum and mitochondria are the first organelles to be involved in injury.
(c) Bupivacaine does not cause any toxicity.
(d) Steroids if added to local anaesthetic prevents against muscle injury.
(e) Extraocular muscles are resistant to damage by the local anaesthetics.

48. Opioid analgesics:
(a) Brainstem rostral ventrolateral medulla is thought to be the main target for opioid respiratory depressant effect.
(b) μ and κ receptors mediate the effects of opioids on bowel.
(c) Laxatives should be prescribed for bowel ileus.
(d) Cross-tolerance is seen with alcohol.
(e) PCA is more effective in pain management in drug abusers.

49. Opioid-related complications:
(a) Meperidine is most commonly involved with delirium.
(b) Morphine metabolites are not active.
(c) Morphine-6-glucronide accounts for dry mouth seen with use of opioids.
(d) Respiratory depression is a κ-mediated effect.
(e) Hypohydrosis is a common side effect.

50. Opioid-induced hypogonadism:
    (a) Depression may be a presenting feature of hypogonadism.
    (b) Is seen due to peripheral inhibition of gonadotrophins.
    (c) Methadone does not cause hypogonadotropic effects.
    (d) Reduced bone density can be seen in association with hypogonadotropism.
    (e) Side effect of testosterone treatment is sleep apnoea.

Answers

1. (a) T (b) T (c) T (d) T (e) T

   Quality is better than systemically administered analgesics. Analgesia up to 12 h is possible with 0.5 % bupivacaine for limb surgery. Insertion of catheter can increase the duration of block for few days. In patients with diabetes, poor pain management can destabilise the insulin requirements which are further worsened by opioid usage. Improved graft survival is seen because of sympathectomy. Better outcomes are seen in plastic and reconstructive surgery.

2. (a) T (b) T (c) T (d) T (e) T

   Davis et al. showed that spinal anaesthesia decreased blood loss during hip replacement surgery. Christopher et al. showed that compared with general anaesthesia, epidural anaesthesia is associated with a lower incidence of reoperation for inadequate tissue perfusion and therefore main be advantageous for this surgical population. The paper showed 50 % reduction in the overall incidence of shivering in patients who received fentanyl, and there was some evidence to suggest that low-dose epidural fentanyl might reduce shivering by an influence on thermoregulation. Epidural analgesia with bupivacaine and morphine provided the best balance of analgesia and side effects while accelerating post-operative recovery of gastrointestinal function and time to fulfilment of discharge criteria in relatively healthy patients. The presence of epidural analgesia was associated with a significantly lower odds of death at 7 days.