

## Book A

**DIRECTIONS :** For each of the questions or incomplete statement below, **ONE** or **MORE** of the answers or completions given is correct.

**Answer :**

A if *only 1, 2, and 3* are correct

B if *only 1 and 3* are correct

C if *only 2 and 4* are correct

D if *only 4* is correct

E if *all* are correct

### DIRECTIONS SUMMARIZED

| A       | B    | C    | D    | E       |
|---------|------|------|------|---------|
| 1, 2, 3 | 1, 3 | 2, 4 | 4    | All are |
| Only    | Only | Only | Only | Correct |

1. The elimination half-life of an amide local anesthetic is prolonged in which of the following conditions?
  - (1) Liver disease
  - (2) Term pregnancy
  - (3) Heart failure
  - (4) Kidney disease
2. Epidural anesthesia for cesarean delivery is planned for a 30-year-old woman in labor. She has preeclampsia and takes propranolol for mitral valve prolapse. A test dose of 3 ml of 2% lidocaine containing 15 ug of epinephrine is administered, and no change in heart rate is noted by palpation of the pulse. Prior to injection of more local anesthetic, blood is freely aspirated from the catheter.

Explanations for failure of the intravenous test dose include:

- (1) The pain of labor masked the change usually seen the test dose
  - (2) Pre-existing beta-adrenergic blockade blunted the tachycardia from the intravenous epinephrine
  - (3) Changes in pulse rate were too brief to be noted by palpation of the pulse
  - (4) Preeclampsia decreases the sensitivity to exogenously administered catecholamines
3. Factors that decrease local anesthetic concentration in the fetus include
    - (1) Maternal hypotension

- (2) Maternal acidemia
  - (3) Maternal serum alpha acid glycoprotein concentration
  - (4) Fetal acidosis
4. Three weeks after exposure to toxic levels of organophosphate insecticide, a farm worker is scheduled for inguinal herniorrhaphy. Which of the following should be avoided?
- (1) Spinal anesthesia with tetracaine
  - (2) Epidural anesthesia with chlorprocaine
  - (3) Atracurium neuromuscular block
  - (4) Succinylcholine infusion

FOR EACH ITEM FILL IN ONLY ONE CIRCLE ON YOUR ANSWER SHEET

DIRECTIONS SUMMARIZED

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5. True statements concerning epidurally administered morphine include:
- (1) The long duration of analgesia results from high lipid solubility
  - (2) Pruritus is completely reversed by naloxone
  - (3) Plasma morphine levels are lower than those seen after intramuscular administration
  - (4) Analgesia is inadequate for the pain of labor

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6. Which of the following statements concerning the cardiovascular effects of intravenous bupivacaine is true?
- (A) Bretylium is effective in treating bupivacaine-induced ventricular arrhythmias
  - (B) Cardiovascular toxicity is decreased during pregnancy
  - (C) Cardiovascular toxicity occurs at lower blood levels than central nervous system toxicity
  - (D) Systemic vascular resistance is unchanged
  - (E) The rate of impulse conduction through the heart is increased

7. Surgery is cancelled 10 minutes after initiation of intravenous regional anesthesia with 50 ml of lidocaine 0.5%. To terminate anesthesia safely, what is the most appropriate timing for deflating the tourniquet?
- (A) Immediately if benzodiazepines have been administered
  - (B) Immediately after intravenous administration of ephedrine 10 mg
  - (C) Immediately followed by repeated reinflation and deflation
  - (D) In no less than 20 minutes after initial injection
  - (E) In no less than 45 minutes after initial injection
8. Characteristics of postdural puncture headache include
- (A) incidence unrelated to the time of ambulation
  - (B) increased severity with addition of vasoconstrictors to the anesthetic
  - (C) less frequent occurrence if the needle bevel is perpendicular to the direction of the dural fibers
  - (D) more frequent occurrence in men
  - (E) prevention by prophylactic epidural blood patch
9. Which of the complications of caudal anesthesia with 0.25% bupivacaine is more likely in children than in adults?
- (A) Intravascular injection
  - (B) Neurotoxicity
  - (C) Profound motor block
  - (D) Systemic toxicity
  - (E) Total spinal block
10. A patient with chronic obstructive pulmonary disease is undergoing spinal anesthesia to a T6 sensory level. The most pronounced effect on pulmonary function will be a decrease in
- (A) minute ventilation
  - (B) peak expiratory flow
  - (C) physiologic dead space
  - (D) tidal volume
  - (E) vital capacity
11. Local anesthetics block nerve conduction by
- (A) closing calcium channels
  - (B) decreasing intracellular calcium concentration
  - (C) decreasing potassium conductance
  - (D) causing extrusion of intracellular potassium
  - (E) inhibiting cellular influx of sodium

From the 1993 ABA In-Training Examination, Book A. Only these eleven questions relating to local anesthetics and regional anesthesia were found in a total of 175 questions (6.2%). Test takers were given 3.5 hours to complete the 175-question examination.

## Book B

**DIRECTIONS :** For each of the questions or incomplete statement below, **ONE** or **MORE** of the answers or completions given is correct.

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- Advantages of performing spinal anesthesia via the lateral approach include
  - Larger opening for needle insertion than for the midline approach
  - Avoidance of the calcified interspinous ligament in the elderly
  - Less flexion of the lumbar spine required than for the midline approach
  - Less likelihood of peridural vein puncture than for the midline approach
- The duration of an epidural block can be increased clinically by
  - Use of a local anesthetic with low protein binding
  - Use of a local anesthetic with low pKa
  - Addition of sodium bicarbonate to the local anesthetic
  - Increasing the total dose of the local anesthetic
- Prior to vaginal delivery at term, a primiparous woman receives epidural anesthesia through a catheter inserted at L2-3. The following day she has left footdrop and sensory loss over the left outer calf. Causes of these complications include
  - Compression of the obturator nerve by excessive thigh flexion
  - Compression of the lumbosacral trunk by the fetal head
  - Nerve root injury by the epidural needle
  - Compression of the common peroneal nerve by the stirrup
- True statements concerning regional anesthesia with peripheral nerve blocks for an operation on the knee using a tourniquet include:
  - The inguinal perivascular block includes the obturator nerve

- (2) Paresthesias are required during sciatic block
- (3) The lateral femoral cutaneous nerve must be blocked
- (4) Block of the lumbar plexus in the psoas compartment provides adequate anesthesia

FOR EACH ITEM FILL IN ONLY ONE CIRCLE ON YOUR ANSWER SHEET

DIRECTIONS SUMMARIZED

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5. Proximal spread of a local anesthetic solution placed in the axillary perivascular space is promoted by
- (1) Increased volume of the local anesthetic agent
  - (2) Digital pressure distal to the injection site
  - (3) Cephalad direction of the needle
  - (4) Adduction of the shoulder after the injection
6. Which of the following peripheral nerves must be blocked for removal of a glass splinter from the plantar surface of the heel?
- (1) Tibial
  - (2) Saphenous
  - (3) Sural
  - (4) Superficial peroneal
7. Neural fibers that transmit pain include
- (1) B fibers
  - (2) C fibers
  - (3) A-alpha fibers
  - (4) A-delta fibers
8. Complications of stellate ganglion block include
- (1) Elevation of the ipsilateral diaphragm
  - (2) Total spinal anesthesia
  - (3) Seizures
  - (4) Hoarseness

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9. A 67 year old man undergoes spinal anesthesia with hyperbaric tetracaine 10 mg for transurethral resection of the prostate. At the end of 50-minute procedure, the level of anesthesia is T6 and the blood pressure 120/70 mmHg. Within two minutes after transfer to a stretcher, the patient has nausea and blood pressure decreases to 76/42 mmHg. Which of the following is the most likely cause of the acute hypotension??
- (A) Acute congestive heart failure
  - (B) Decreased venous return
  - (C) Dilutional hyponatremia
  - (D) Progressive sympathetic block
  - (E) Unrecognized bladder perforation
10. Which of the following is a cardiorespiratory effect of epidural block to a T4 sensory level?
- (A) Decreased expiratory reserve volume
  - (B) Decrease tidal volume
  - (C) Increased circulating catecholamine concentrations
  - (D) Increased heart rate
  - (E) Unchanged vital capacity
11. An 8-kg, 1-year-old boy is scheduled for a bilateral inguinal hernia repair. If regional anesthesia is to be used for post-operative analgesia, which of the following statements is true?
- (A) Caudal administration of 0.25% bupivacaine will provide analgesia without evidence of motor block
  - (B) Caudal administration of 0.125% bupivacaine is as effective as caudal administration of 0.25% bupivacaine
  - (C) Caudal analgesia is more difficult to achieve in young children than in adults
  - (D) The recommended volume of local anesthetic used for caudal analgesia in children is 3 ml per year of age
  - (E) The volume of 0.25% bupivacaine required for bilateral ilioinguinal and ileohypogastric nerve block would be too large
12. If administered epidurally in equipotent doses, which of the following opioids will produce analgesia over the greatest number of dermatomes?
- (A) Fentanyl
  - (B) Hydromorphone
  - (C) Meperidine
  - (D) Morphine

(E) Sufentanil

13. Which of the following is decreased by alkalinization of a 1.5% lidocaine solution?

- (A) Concentration of free base
- (B) Dose required for anesthesia
- (C) Duration of anesthesia
- (D) Intracellular concentration of ionized lidocaine
- (E) Time to onset of anesthesia

14. Twelve hours after an uneventful hysterectomy with lidocaine epidural anesthesia, a 70-year-old woman has partial paralysis of the lower extremities. She is receiving morphine 0.5 mg/hr through an epidural catheter and is pain free. On examination, definite motor loss is noted in the lower extremities, but no other deficits are apparent. The most appropriate action at this time is to

- (A) Administer naloxone
- (B) Substitute fentanyl for morphine infusion
- (C) Remove the epidural catheter
- (D) Obtain an MRI of the lumbar spine
- (E) Reassure the patient

15. The low fetal/maternal plasma ratio of bupivacaine compared with lidocaine is due to

- (A) Fetal tissue binding
- (B) Fetal plasma protein binding
- (C) Maternal plasma protein binding
- (D) Ionization in maternal blood
- (E) Ionization in fetal blood

16. A combined epidural and general anesthetic is used for aortofemoral bypass surgery. Just prior to extubation, the patient received morphine through the epidural catheter. Eleven hours later, he is unresponsive while breathing 40% oxygen from a face mask. Respiratory rate is 6/min and SpO<sub>2</sub> is 92%. Arterial blood gas analysis shows PaO<sub>2</sub> 80 mmHg, PaCO<sub>2</sub> 84 mmHg, and pH 7.16.

Which of the following statements concerning this patient is true?

- (A) Hypercarbia is contributing to the decreased level of consciousness
- (B) Naloxone is ineffective for reversing the respiratory depression
- (C) The oxygen saturation is higher than expected because of the pH
- (D) The risk of respiratory depression would have been lower with the subarachnoid administration of 0.5 mg morphine
- (E) Residual local anesthetic is contributing to the respiratory depression

From the 1993 ABA In-Training Examination, Book B. Only these sixteen questions relating to local anesthetics and regional anesthesia were found in a total of 175 questions (9.1%). Test takers were given 3.5 hours to complete the 175-question examination.