Pharmacology Questions
(CNS Drugs)

1. Regarding antipsychotics as a group

    a. Metabolites are important to the action of these drugs
    b. Haloperidol has a higher systemic availability than thioridazine or chlorpromazine
    c. Elimination half lives of these drugs range between 3 – 6 hours
    d. This group of drugs generally has short clinical duration of action
    e. Clozipine is a member of the dihydroindolone group

2. Which of the following antipsychotics (in excess dose) is responsible for cardiac arrhythmias?

    a. Chlorpromazine
    b. Clozapine
    c. Thioridazine
    d. Haloperidol
    e. Thiothixene

3. Plasma lithium levels (assuming no change in daily lithium dose) may become toxic in the presence of all of the following EXCEPT

    a. Pregnancy
    b. Use of thiazides
    c. Dehydration
    d. Use of some non-steroidal anti-inflammatory drugs
    e. Post partum state

4. Regarding pharmacokinetics of antidepressants

    a. Most are highly protein bound
    b. Fluoxetine is poorly absorbed
    c. Tricyclics are predominantly excreted unchanged in the urine
    d. Plasma half lives of antidepressants are mostly less than 10 hours
    e. The half life of the older MAOIs is helpful in governing doses

5. Which of the following drugs is potentially dangerous in a single drug overdose

    a. Moclobemide
    b. Paroxetine
    c. Sertraline
    d. Trazodone
    e. Amoxapine

6. Which of the following drugs is 99% protein bound in plasma

   a. Gentamicin
   b. Theophylline
   c. Carbamazepine
   d. Atenolol
   e. Diazepam

7. Which of the following drugs is contraindicated (absolutely) in a patient with porphyria

   a. Zolpidem
   b. Chloral hydrate
   c. Buspirone
   d. Phenobarbitone
   e. Diazepam

8. Regarding local anaesthetic agents

   a. Lignocaine is also an antiarrhythmic of the Vaughan Williams classification group 1A
   b. At normal pH the larger fraction of local anaesthetic in the body fluids will be in the unchanged form
   c. Bupivacaine may cause an apparent cyanosis in some patients
   d. The duration of action of procaine will be increased in the presence of liver disease
   e. Local anaesthetic agents block conduction in small myelinated axons prior to blockade of other axons

9. Regarding IV anaesthetic agents

   a. Ketamine is the induction agent of choice in a head injured patient
   b. Propofol has a slow offset of action
   c. Etomidate causes hypotension more commonly than thiopentone
   d. Ideal agents for neuroleptanalgesia are fentanyl and droperidol
   e. Thiopentone is metabolised at a rate of 40-50% per hour in humans following a single dose

10. Suxamethonium

    a. Is a non-depolarising neuromuscular blocking agent
    b. Is contraindicated in all eye operations
    c. Stimulates cardiac muscarinic receptors and autonomic ganglia
    d. Its action is directly terminated by the action of plasma cholinesterase
    e. Should not be administered to patients with burns >24 hours old because of its hypercalcaemic effect

11. Inhalational anaesthetics

    a. Enflurane is proconvulsant
    b. Isoflurane is the inhalational agent of choice in patients with active IHD
    c. Nitrous oxide is a useful adjunct to volatile anaesthetic use in women in the first trimester of pregnancy
    d. Halothane has a MAC value of 75% making it less potent than desflurane
    e. Desflurane is extensively metabolised via the liver

12. Phenytoin

    a. Is 20-30% bound to albumin
    b. Is the drug treatment of choice in absence seizures
    c. Undergoes flow limited elimination
    d. Steady state mean plasma concentrations varies disproportionately with the dose
    e. Preferentially binds to activated state sodium channels

13. Drugs of abuse can be extremely dangerous in the wrong hands! Which of the following is correct

    a. Ketamine is structurally related to psilocybin
    b. LSD acts on various 5 HT receptor subtypes to produce its mind altering effects
    c. Marijuana causes mydriasis and conjunctival infection
    d. Cocaine has a long plasma half life
    e. Amphetamine like drugs cause marked stimulation of appetite

14. Flumazenil

    a. Is cleared renally
    b. Predictably reverses benzodiazepine induced respiratory depression
    c. Antagonises CNS effects of opioids
    d. Can precipitate seizures in mixed overdose
    e. Has a half life of around 10 hours

15. Regarding non-depolarising muscle relaxants

    a. Pancuronium is eliminated via the kidney
    b. Roacuronium is an isoquinolone derivative
    c. Roacuronium undergoes Hoffman elimination
    d. Vecuronium is eliminated predominantly via the kidney
    e. Atracurium is eliminated via plasma pseudocholinesterase

16. Which of the following is a direct serotonin agonist

    a. Fluoxetine
    b. Amitriptylline
    c. Moclobemide
    d. Ondansetron
    e. Sumatriptan

17. The opiate associated with seizures when given in high doses to patients with renal failure is

    a. Morphine
    b. Pethidine
    c. Methadone
    d. Fentanyl
    e. Codeine

18. Ethanol

    a. Is lipid soluble
    b. Is metabolised by the MEOS system at blood concentrations below 100mg/dl
    c. Is a vasodilator
    d. The most frequent neurological abnormality in chronic alcoholism is asymmetrical peripheral nerve injury specific to hands and feet
    e. Alcohol is estimated to be responsible for approximately 10% of cases of hypertension

19. Which of the following local anaesthetic agents is an ester

    a. Bupivacaine
    b. Ropivacaine
    c. Prilocaine
    d. Procaine
    e. Lignocaine

20. Regarding temazepam – all of the following are true EXCEPT

    a. It produces inactive metabolites
    b. It induces enzymes only to a minimal extent
    c. It causes less hangover than nitrazepam
    d. It causes rebound insomnia
    e. It increases REM sleep

21. Regarding the antiepileptic drugs

    a. Lorazepam has documented efficacy against absence seizures
    b. Phenytoin is able to stimulate its own metabolism by enzyme induction
    c. Valproate has a large Vd (>500l/70kg)
    d. The most common dose related adverse effects of Carbamazepine are ataxia and diplopia
    e. Vigabatrin works by sodium channel blockade

22. Benzodiazepines

    a. Increase the duration of GABA gated chloride channel openings
    b. Will depress (in high doses) the CNS to the point known as stage 3 of general anaesthesia
    c. Bind to GABAβ receptors
    d. Have extensive cardiodepressant effects in doses used to cause hypnosis
    e. Decrease the duration of stage 2 NREM sleep

23. Regarding drugs used in Parkinson's disease

    a. Bromocriptine is the first line drug to treat Parkinson's disease in psychotic patients
    b. 80-90% of a single dose of Levodopa enters the brain unaltered
    c. Patients taking Selesiline to treat Parkinson's disease are limited in what they can eat because of the tyranine reaction phenomenon
    d. Amantadine has anti Parkinsonian effects and is administered at a dose of 100mg bd
    e. Anti muscarinic drugs are of benefit in elimination of bradykinesia in Parkinson's

24. A patient complains of post op muscle pain. This is most likely to be due to

    a. Suxamethonium
    b. Propofol
    c. Isoflurane
    d. Atracurium
    e. Ketamine

25. Lithium

    a. Has rapid onset of action
    b. Is partially renally excreted
    c. Has no neurological side effects
    d. Has no contraindications to be given in conjunction with NSAIDS
    e. Is contraindicated in sick sinus syndrome

26. With respect to opioid receptors

a. Fentanyl works predominantly at the kappa receptors
b. Both U and delta receptors contribute to respiratory depression
c. Methadone is used for heroin withdrawal because its actions are predominantly at the delta receptors
d. Opioid receptors are coupled to a tyrosine kinase mechanism of action
e. Physical dependence and tolerance is caused by the rapid disintegration of receptors

27. Lignocaine

a. Penetrates the axon in its changed form
b. Is more potent than bupivacaine
c. Has higher affinity for activated than resting sodium channels
d. Is a weak acid
e. Blocks voltage gated sodium channels at their extracellular end

28. Regarding adverse effects of propofol

a. Post op vomiting is common
b. Hypertension is a complication
c. Severe acidosis can occur with its use in paediatric respiratory infections
d. It is positively inotropic
e. Tremor is a common side effect

29. Regarding inhaled anaesthetics

a. They reduce MAP in direct proportion to their alveolar concentration
b. Nitrous oxide has a relatively low MAC
c. Halogenated agents have a lower brain:blood partition coefficient
d. Nitrous oxide causes a decrease in tidal volume and an increase in respiratory rate
e. They decrease the metabolic rate in the brain by decreasing cerebral blood flow

30. Local anaesthetic agents

a. Are primarily K^+ channel blockers
b. Prevent repolarisation of the membrane
c. Can be used with a vasodilator to prolong local action
d. Activity is enhanced by high extracellular K^+ concentration
e. Activity is enhanced by high extracellular Ca^{2+}

31. Which of the following side effects for given drugs is wrong

a. Phenytoin – gum hypertrophy
b. Ethosuximide – hirsuitism
c. Phenobarbital – enzyme induction
d. Carbamazepine – ataxia
e. Valproate – idiosyncratic hepatic toxicity

32. The main side effect of benztropine is

a. Miosis
b. Confusion
c. Diarrhoea
d. GIT haemorrhage
e. Bronchorrhoea

33. Thiopentone

a. Is not lipid soluble
b. Can be used IM or IV to induce anaesthesia
c. Has good analgesic properties
d. Can cause convulsive movements
e. Anaesthetic action is terminated by redistribution from CNS to other highly vascularised tissues

34. Nitrous oxide

a. Can be used with O_2 as a carrier gas for halothane
b. Has poor analgesic properties
c. Forms a vapour which is explosive
d. Sensitises the heart to the action of catecholamines
e. Is an effective agent for inducing anaesthesia

35. Codeine

a. Is more potent than fentanyl
b. Frequently causes diarrhoea
c. Is used to treat nausea caused by morphine
d. Occurs in foxglove plants
e. Depresses the cough reflex

36. Regarding GABA: all the following are true EXCEPT

a. Receptor blockers have anticonvulsant activity
b. Is found in high concentrations in the basal ganglia
c. Concentrations in the basal ganglia are abnormally low in Huntington's chorea
d. Metabolism is inhibited by sodium valproate
e. Receptors are sensitive to the activity of benzodiazepines

37. Regarding local anaesthetics (LA)

a. Lignocaine is metabolised in the liver faster than any of the other amide LA
b. Allergies to amide Las are more common than with the ester Las
c. Prilocaine is the most cardiotoxic LA
d. Cocaine is an amide LA which is often used as a drug of abuse
e. The +1/2 of lignocaine may be increased 3-4 fold in a patient with severe liver disease

38. Regarding nondepolarising muscle relaxants

a. Jaw and eye muscles are paralysed before the limb and trunk muscles
b. Rocuronium is the most potent nondepolarising skeletal muscle relaxant
c. Atracurium is a steroid derivative
d. Vecuronium blocks cardiac muscarinic receptors, thus inducing moderate increase in heart rate
e. The nondepolarising agents produce a non-surmountable blockade

39. The skeletal muscle relaxant with the longest duration of action is

a. Suxamethonium
b. Mivacurium
c. Pancuronium
d. Rocuronium
e. Vecuronium

40. Which of the following DOES NOT increase the susceptibility of a nerve fibre to conduction blockade by a local anaesthetic

a. Small diameter
b. Myelination
c. Location in the periphery of a nerve
d. High firing rate
e. Short action potential duration

Pharmacology Answers (CNS drugs)
29 November 2005

1. b
2. c
3. a
4. a
5. e
6. e
7. d
8. e
9. d
10. c
11. a
12. d
13. b
14. d
15. a
16. e
17. b
18. c
19. d
20. e
21. d
22. b
23. d
24. a
25. e
26. b
27. c
28. c
29. a
30. d
31. b
32. b
33. e
34. a
35. e
36. a
37. e
38. a
39. c
40. e