IV Agents

IV01 [Mar96] [Mar97] [Jul97] Propofol:

A. Has a pKa of 7
B. Has a pH of 11
C. Causes hypotension due to myocardial depression
D. Has 98% protein binding
E. ?

IV02 [Mar96] [Jul97] [Apr01] Thiopentone causes a decrease in BP by:

A. Direct decrease in myocardial contractility
B. Fall in systemic vascular resistance - SVR usually unchaged
C. Decrease in venous tone
D. ?

Other effects include:

- SVR is usually unchanged
- Pulmonary vessels are dilated
- Myocardial contractility is depressed (but to a lesser extent than with volatile agents)
- Only slight baroreceptor reflex suppression
- Cerebral vasoconstriction (decreasing CBF & ICP) due to decreased cerebral metabolism

IV03 [Mar96] [Jul96] [Jul97] [Mar99] Ketamine:

A. Is a direct inotrope
B. Causes bronchodilatation
C. Less likely to see emergence delirium (?psychotomimetic effects) in ?older/?younger females more likely in adult female; less in elderly, children, bz, premed
D. Reduces pharyngeal secretions
E. Leaves airway reflexes **reliably** intact so no
(See IV17 for another Ketamine Q)

IV04 [Mar96] [Apr01] With regards the action of midazolam:

A. Ring closure occurs immediately on injection
B. ?

C. ?

IV05 [Jul97] [Mar99] [Jul99] [Apr01] Propofol depresses cardiac output predominantly by:

A. Direct depression of myocardial contractility
B. Decreased SVR
C. ?
D. ?

1. Propofol causes both direct myocardial depression and vasodilation causing decreased SVR
2. Propofol has beta blocking properties; thus a reflex tachycardia is not seen
3. ↓MAP caused by vasodilation
4. The reduction in cardiac output, is caused by direct myocardial depression
5.

IV06 [Jul97] [Apr01] Methohexitone:

A. Has a molecular weight of 285
B. Has a melting point of 158 degrees
C. A 2.5% solution is isotonic
D. Is yellow
E. Has 4 isomers

(*NB*: AS methohexitone is no longer available in ANZ, MCQs about it are not very unlikely)

IV07 [Mar98] Benzodiazepine binding site on GABA receptor is:

A. Near Cl- channel
B. Inside the channel
C. Outside the channel
D. On the alpha subunit

IV08 [Mar98] [Jul01] The drug with the largest volume of distribution at steady state is:

A. Propofol 4.5
B. Midazolam 1.5
C. Etomidate
D. Thiopentone 2.5
E. Methohexitone

IV09 [Jul98] [Jul04] GABA:

A. Is the principal inhibitory neurotransmitter in the spinal cord
B. Barbiturates decrease the dissociation time between GABA and its receptor
C. ??A & B types??
D. ?
(see also IV18)

IV10 [Mar96] Propofol is structurally related to:

A. Althesin
B. Etomidate imidazole derivative
C. Ketamine cyclohexanol
D. ?
E. None of the above

IV11 [Mar99] [Feb00] Midazolam:

A. Water soluble at physiological pH
B. Undergoes oxidative metabolism
C. More lipophilic than lorazepam
D. Causes hypotension
E. Has a pKa of 7.4 (or ? 8.1)
F. Causes retrograde amnesia

IV12 [Jul98] Thiopentone:

A. Is the sulphur analogue of phenobarbitone nope is PENTObarbitone
B. Has higher protein binding than its oxy analogue
C. ? 6% sodium bicarbonate carbonate
D. Isotonic at 2.5% concentration

IV13 [Jul98] Propofol clearance is significantly increased in:

A. Elderly
B. Metabolic acidosis
C. Pregnancy ↓albumin
D. ? (See also IN13b)
others....Fever, Hyperthyroidism, Anaemia (increase hepatic blood flow)

IV14 [Feb00] [Jul04] Thiopentone:

A. 100% reabsorbed in renal tubule wary of 100% but is mostly reabsorbed here!
B. Does not cross the placenta in significant amounts due to high plasma protein binding lipid soluble so easy to cross
C. ??accumulate in the foetus conc not as high as mother due to liver processing but ↑ed free drug due to ↓PPB. further ↑activity in fetal acidosis

IV15 [Jul00] Thiopentone:

A. ? Tachyphylaxis if multiple administration in short period - mechanisms over and above enzyme induction (occurs in 2-7days)
B. ??

IV16 [Jul00] Propofol:

A. 10% eliminated unchanged 0.3
B. Undergoes oidative metabolism conjugation to gluconiride & suplhates although will undergo oxidative phase I reactions as well!!
C. Clearance depends on hepatic bloodflow
D. No effect / chronic liver disease
E. ?

Reconstructed IV17:

Ketamine:

A. Direct acting negative isotope
B. ?Indirectly acts on sympathetic nervous system peripherally
C. Directly on the sympathetic ganglia
D. Is a competitive antagonist at NMDA receptors = NON competitive
E. Directly stimulates alpha and beta receptors

IV17a [Jul04] Ketamine:

A. Is a NON-competitive antagonist at NMDA receptors
B. ?Direct acting negative inotrope
C. ?Indirectly acts on sympathetic nervous system peripherally
D. ?Directly on the sympathetic ganglia
E. ?Directly stimulates alpha and beta receptors

IV18 [Jul01] With regard to GABA receptors: (OR: Which of the following is INCORRECT about GABA neurotransmission:)

A. GABA-A found all over the body WRONG
B. Is an excitatory transmitter in 20% of CNS synapses WRONG is inhibitory
C. GABA-B is predominately post-synaptic presynaptic
D. GABA receptor located in spinal cord, medulla and rest in Cortex. TRUE
E. Is metabolised by deamination WRONG - its an amino acid
F. Is metabolised by transamination by ?GABA transaminase TRUE
G. Stimulated by benzodiazepines TRUE
H. Opposes action of glycine FALSE - glycine is also inhibitory
(*Above is a composite of options from two GABA questions which were on the Jul 01 paper.*)

IV19 [Jul01] Propofol:

A. Causes decreased hepatic blood flow to influence its own clearance
B. Relatively low clearance in Children
C. Has a high rate of transfer from the peripheral to the central compartment on ceasing an infulsion
D. Has clinically significant metabolites
E. Elimination halflife of 5 minutes

IV20 [Mar02] Which one of the following induction agents does NOT exert its main effect via the GABA receptor?

A. Ketamine
B. Thiopentone
C. Propofol
D. Midazolam
E. Methohexitone

IV21 [Feb04] Sodium carbonate added to Thiopentone:

A. As a bacteriostatic agent
B. To neutralise thiopentones acidity
C. To increase ionised portion
D. Enhances activity

IV22 [Jul04] Which agent does not cause increased heart rate on induction of anaesthesia?

A. Thiopentone
B. Etomidate
C. Propofol
D. Ketamine
E. Methohexitone

IV23 [Jul04] Benzodiazepine receptor has

A. Two glycine binding sites
B. ?

IV24 [Jul04] Midazolam

A. Bioavailability 10%
B. Bioavailability 50%
C. Elimination t1/2 30]] min
D. Elimination t1/2 30]] hours
E. ?

IV25 Ketamine is not usually used as a sole TIVA agent because:

A. It causes profound analgesia but insuffient hypnosis for procedure
B. It causes emergence phenomena in up to 30% of patients when given as an infusion
C. It is too water soluble (*or something like that*) compared to propofol is more water soluble ie an advantage
D. Half life is 80 mins t1/2 elim 2.5hrs
E. ?

IV26 The amount of thiopentone remaining in brain 30 mins after administration:

A. 10%
B. 20%
C. 30%
D.
E. 40%

IV27 Thiopentone is:

A. anti-analgesic in sub-therapeutic doses
B. ?
C. ?
D. ?
E. ?

IV28 Propofol is preferred to thiopentone in TIVA because:

A Low therapeutic index - false
B T1/2 keo - false
C high clearance - true
D. ? *something about lipid solubility - false*
E. ?

IV29 Comparing thiopentone to propofol:

A. Resistance to infection thiopentone > propofol
B. t½keo propofol = thiopentone
C. Effect site conc thiopentone faster than propofol
D. Pain on infection thio > prop (**or**: propofol > thiopentone) Pro>thio
E. ?

IV30 [Feb13] Propofol:

A. Has a chiral centre
B. Does NOT need a dose reduction in the elderly
C. Has active metabolites
D. Clearance affected in cirrhosis
E. ?

IV31 [Feb13] Five minutes after giving thiopentone, the amount remaining in brain is:

A. 5%
B. 10%
C. 30%
D. 50%
E. 100%
(Possibly IV26 remembered differently)

IV31b [Alt Version] Percentage of thiopentone dose remaining in the brain *FIVE* minutes after a bolus dose: (*definitely 5 not 30 mins as previously recalled/asked*)

a) 0.2%
b) 0.5%
c) 20%
d) 35%

e) 50%

IV32 Addition of sodium carbonate to thiopentone:

A - Confers a yellow colour
B - Increases lipophilicity??
C - provides CO_2
D -
E - Bacteriostatic??

IV33 With regards to the structure of barbiturate drugs: *(Refer to Stoelting 4E p127)*

a)
b) Oxygen substitution at the 1- position increases ?half-life
c) Phenol substitution at the 5- position increases anticonvulsant activity

IV34 Propofol clearance *(There were two questions on it - can't recall both so I've put what I can recall from them together)*

a) Decreased in hepatic failure
b) Decreased in renal failure
c) Increased in children
d) Decreased in cirrhosis

IV35 Ketamine:

A decreases ICP / CBF
B acts via opioid receptors does have opiod activity!!!
C decreases salivation
D airway reflexes
E ?