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New Unclassified Qs

Fluid & Electrolyte Physiology

FE39b Colloids:

A. ?
B. ?
C. HES is completely excreted by the kidney
D. Dextran 40 is used to improve micro-circulatory flow - ↓viscocity by dilution

Acid-Base Physiology

Respiratory Physiology

RE47 How much oxygen is dissolved in blood (repeat):

A. 6ml at 3atm 100%
B. ?
C. ?

Cardiovascular Physiology

Renal Physiology

GIT Physiology

Blood & Immunology

Endocrine & Metabolic Physiology

ADH in the kidney:

A. works via the V1A receptor to cause vascoconstriction
B. Inserts aquaporins into the basolateral membrane of the collecting duct. apical

Neurophysiology

NU14 Which of the following is TRUE about CSF:

A. lumbar CSF pressure is 110mmHg norm 5-20cmH20 or 14mmHg

Physiology of Muscle and Neuromuscular Junction

What is the first energy source in muscle?

a) ATP
b) Creatine phosphate

Maternal, Foetal & Neonatal Physiology

Clinical Measurement

CM41 What is the difference between *tool air* and *medical air*?

a) ?
b)
c) tool air has oil mist
d) tool air has higher fraction of oxygen
e) tool air has lower fraction of oxygen

Anatomy

NP01 At what level does the spinal cord end in the adult?

A. S2
B. T12
C. L1 down to L3 in newborn
D. L5

NP02 The SVC is formed by what 2 structures?

A. Brachiocephalic trunk and azygous vein.
B. Right and left brachiocephalic vein aka R = inonimate
C. Internal jugular vein and right subclavian vein.

General Pharmacology

- repeat* Feb 2013 q 20

20. The following are all second messengers EXCEPT:

A. Inositol triphosphate
B. Diacyl glycerol
C. Calcium
D. Nitric oxide - is a 2nd m. able to diffuse across membranes
E. G proteins

Nitric oxide:

a) Inhibits platelet aggregation on the vascular endothelium.
b) Increases cAMP.
c) Is a potent vasoconstrictor
d) Causes Pulmonary hypertension

Which of the following are NOT subject to a high degree of first pass metabolism?

A Propranolol 30-50% OBA
B Metoclopramide 80%
C Lignocaine 30%
D Midazolam 50%
E *something else that is*

- repeat* Plasma cholinesterase metabolises all of the following except

a Cocaine
b Heroin
c mivacurium
d etomidate
e remifentanil

In a patient who developed peripheral neuritis with isoniazid, more likely to have adverse reaction to

a Aspirin
b Sulphonamides
c Amide local anaesthetics
d thiopentone

A context insensitive half time means that

a Subject to organ independent metabolism
b No active metabolite

c same time to recovery after cessation of infusion irrespective of duration
d same rate of fall in plasma concentration after cessation of infusion irrespective of duration
Codeine

a is a partial agonist and hence has none of the respiratory depressant or sedative effects of morphine
b undergoes 6-demethylation by cyp2D6 to exert its main therapeutic effect
c undergoes 3-demethylation to active metabolite morphine to exert its main therapeutic effect
d is used as the sole anaesthetic agent in weasels and other mustelids because they possess an ultra-rapid cyp2D6 enzyme
3 pathways:
- 6-OH gluconiridtion
- N demthylation - norcodeine
- O-demethylation - morphine (only active metab) - is prevented with CYP2D6 variability

Inhalational Agents

Feb 2013 18. Impurities of nitrous oxide production:

made by careful heating of ammonium nitrate

careful removal of impurities required

A. NH3
B. NO2
C. NO
D. N2
E. all of the above

Isoflurane:

a) Increase in ICP at 1 MAC
b) No increase in ICP up to 1 MAC

Intravenous Anaesthetic Agents

Feb 2013 19. Sodium carbonate (Na2 CO3) is added to sodium thiopentone resulting in:

A. Change of colour - due to presence of sulphur molecule
B. Decrease pH of solution ↑pH to 10.5
C. Release CO2 from solution
D. Decrease solubility of solution causes ↑solubility to water ie enol form
E. Bacteriostatic properties

IV31 After 5 mins of giving thiopentone, amount remaining in brain is:

The brain receives about 10% of the total dose of thiopental in the first 30 to 40 seconds. This maximal brain concentration is followed by a decrease over the next 5 minutes to one-half the initial peak concentration, due to redistribution of the drug..." -Stoelting

a) 5%
b) 10%
c) 30%
d) 50%
e) 100%

IV30 Propofol:

A. Has a chiral centre
B. Does NOT need a dose reduction in the elderly
C. Has active metabolites 4-hydroxypropofol with 1/3 hyponotic activity
D. Clearance affected in cirrhosis

Local Anaesthetic Agents

Which is the correct order of potency in peripheral nerve blockade

a) bupiv > ropiv > lignocaine > prilocaine
b) bupivacaine=ropivacaine> lignocaine> prilocaine
c) levobupivacaine>lignocaine>prilocaine
d) Prilocaine> bupivacaine> ropivacaine>lignocaine

Major Analgesics and Opioids

80 year old man on PCA morphine, found obtunded. What's the most likely cause?

a) Accumulation of M-3-G
b) Accumulation of M-6-G
c) Accumulation of Normorphine
d) Accumulation of norcodeine.

Which of the following is TRUE about pain

a) substance P functions as a transmitter

Cardiovascular

First drug used to treat VF:

a) Lignocaine
b) Amiodarone
c) Adrenaline
d) Sotalol

Increased sympathetic nervous system stimulation causes:

a) decreased peristalsis
b) skin vasodilation - tonic SNS vasoC to Arterio/Veno anastomoses. vasoD in exercise because of heat and local metabs overcoming ↑SNS d/c
c) splanchnic vasodilation
d) something else
e) vasoconstriction of skeletal muscle

Heart rate increases with:

A. ?
B. ?
C. activation of ventricular baroreceptors
D. increased atrial stretch
E. expiration

Hypokalaemia causes:

long PR, T wave flatten & invert, ST depression, U waves, apparent long QT (fusion of T&U waves)

HYPER = loss P, long QRS, tent Ts, sinus brady or slow AF

a) short PR interval
b) increased QRS duration
c) prolonged QT (but apparent)
d) heightened T-wave
e) hyperpolarizes the plasma membrane (the wording was definitely "plasma" membrane)

Myocardial work decreases with increasing:

a) contractility
b) ejection fraction
c) preload

d) aortic compliance
e) CVP

The last part of the heart to depolarise following atrial depolarisation is:

a) endocardium at the apex
b) base of the left ventricle
c) epicardium at the apex
d) base of the right ventricle
e) endocardium of the right ventricle

Muscle Relaxants and Antagonists

?

Anticholinergics / Antimuscarinics

Antiemetics

Psychotherapeutic Drugs

Endocrine Drugs

Feb2013 16. A 25 year old female presents with acute thyrotoxicosis. Which would result in rapid control of her symptoms

A. Carbimazole = prodrug. prevents thyroid perioxidase creating thyroxine on thyroglobulin
B. Methimazole - similar to carbimazole
C. Radioactive iodine - rapid definitive Rx
D. Propothiouracil - takes 2-4months before euthyroid
E. Iodide (Lugols) - ↑iodide inhibits iodide uptake thus also an option.

Miscellaneous Drugs

Feb2013 17. Proton pump inhibitors have few adverse effects. What is the MOST COMMON side effect?

A. Dry, non productive cough
B. nausea and constipation
C. Myopathy, worse on movement
D. Visual disturbances
E. Transient elevation AST, ALT

Which of these is an NMDA receptor antagonist?

a) dextropropoxyphene - opioid
b) dextrometorphan - antitussive
c) dexmetetomidine α2 blocker

Amiodarone and adenosine
- Both are vaughn williams class III antiarrhythmics
- Both prolong PR and refractory period
- Amio half time is 10 hours, adenosine is 10 mins

Digoxin
- Causes visual disturbance xanthopsia

Droperidol – which side effect doesn't it cause? ↑s seizure threshold
- Hypotension
- QT prolongation
- Torsade de pointes
- Extrapyramidal side effects
- ?Myoclonic movements

Neurokinin receptor antagonists NK1 antagonist: aprepient chemo antiemetic. unique antidepressant,[1] anxiolytic,[2] and antiemetic properties
- Act via substance S P
- Act on opioid receptors in the CTZ
- Act by blocking opioid and dopamine receptors
- Act by blocking vestibular input

Regarding beta blockers
- Metoprolol and propranolol both have halflives of 3-4 hours - labetalol, metoprolol, propanolol all 3-4hours (atenolol 6-9, carved 7-10, esmolol 15min)
- Atenolol and ? Are both mainly renally excreted

(renally excreted= atenolol, nadolol pindalol, timolol)

Neostigmine inhibits activity of plasma cholinesterase
- Has similar volume of distribution to atracurium 0.16L/kg (neo 0.6-1L/Kg)
- Has active metabolites - weakly active

Which opioid does have offset resulting from redistribution?
- Fentanyl
- Oxycodone - ↑lipid soluble, & ↑VD
- Morphine

- Methadone
- Codeine

What is true about drugs with a CONSTANT context-sensitive half time?
- They have same halftime regardless of duration of infusion

Which drug can cause glaucoma?
- Atropine
- Pilocarpine mAch agonist
- Timolol - ↓production & resists mydriasis

Desflurane
- Can cause apnoea at 2 MAC

The major factor resulting in offset of noradrenergic action is:
- Metabolism by COMT
- Metabolism by MAO
- Uptake by ganglion (it said ganglion)

Metabolism of vecuronium occurs via
- 3 and 17 deacetylation & pancuronium

rocuronium excreted 80% bile, 10% urine (95% unchanged)

The anti-convulsant activity of barbituates is improved by
- Adding a phenyl group to the C5 carbon

The action of ipratropium on the lungs is mediated by - it is a non specific muscarinic antagonist
- Non-specific muscarinic antagonism - is correct
- M3 antagonism - predominant lung receptor

The mechanism of tranexamic acid's effect- competitvely inhibits plasminogen to plasmin
- Activates fibrinolytic protease something
- Breaks down plasminogen

Heparin needs to be dosed in international units as it comes from
- Pig intestine & bovine lung

Vitamin K is required for synthesis of:
- Protein C
- Factor XII

Vasopressin is not used in the following clinical situations
- Nephrogenic diabetes insipidis

Regarding bupivacaine and ropivacaine
- Similar chemical properties - ish?
- Ropivacaine causes more motor block
- Ropivacaine is prepared as a pure R enantiomer

Regarding benzodiazepines
- Only 50% of midaz makes it to the circulation from oral dose
- Generally cardiovascularly stable

Which of the following has the least ionotropic effect
- Insulin
- Adrenaline
- Cortisol

A patient is allergic to azithromycin. Which are they also likely to be allergic to?
- Clindamycin - lincosamide
- Erythromycin - macrolides

Regarding Naltrexone
- It has good absorption in the small intestine - basic drug ∴ likely small bowel

Frusemide effects
- Metabolic acidosis met alkalosis via ECF volume depletion ⟹ ↑Na/H exchange in prox mechanism ⟹ retain Na, lose H
- Decreased uptake of Cl and Na in thick ascending LoH

Which drug potentiates the effects of NDMR?
- Cyclosporin
- Mannitol
- Frusemide - ↓cAMP release ⟹ ↓Ach

Regarding treatment for phaeochromocytoma
- Give betablocker before phenoxybenzamine (non selective α antagonist irreversible 100:1 α1:α2). NEVER GIVE ßB before α blocker
- Phenoxybenzamine is **selective** alpha1 antagonist. is good long term Rx but ß blocker may be needed as well
- Something else correct I think?

IV phentolamine (α1 blocker) in HTN crisis or

Which drugs are metabolised by CYP2D6
- Codeine & tramadol
- Tramadol

- Methadone
- Fentanyl
- A, B and C

For a drug with a low hepatic extraction ratio
- It has low bioavailability
- It will likely have zero order kinetics at high concentrations
- Its metabolism is dependent on hepatic blood flow

Regarding alphablockers
- Terazosin decreases TPR and venous tone

In a neonate
- Need to increase per kg dose of gentamicin due to increased body water sounds good

Suxamethonium
- Should **never** be used for opthalmic surgery as it increases IOP
- Can cause tachycardia

What is likely cause of increased carbon dioxide during a long case?
- Sevo more likely to cause it than des
- Dry sodalime wet sodalime ⟹ ↓CO2 absorbance capacity

Xenon and nitrous oxide
- Both raise ICP - both ↑CBF

What % of total initial injected dose of thio remains in brain after half an hour?
- 10%

What will immediately break a circuit due to a drip falling on a plug box
- A residual current device

A **residual-current device** (**RCD**), or **residual-current circuit breaker** (**RCCB**) is an electrical wiring device that disconnects a circuit whenever it detects that the electric current is not balanced between the energized conductor and the return neutral conductor. Such an imbalance may indicate current leakage through the body of a person who is grounded and accidentally touching the energized part of the circuit. A lethal shock can result from these conditions. RCCBs are designed to disconnect quickly enough to prevent injury caused by such shocks. They are not intended to provide protection against overcurrent (overload) or all short-circuit conditions.

What forms the SVC

- L and R brachiocephalics

What does the epidural space NOT contain?
- Fat
- Something veins
- Some artery – I think its this..

Where does the spinal cord end
- L1

Regarding dermatomes
- The umbilicus is at T?
- The nipple is at T?
- The C3/4 dermatomes are adjacent to T1

100% O2 at 3 atmospheres gives what dissolved conc of O2 in plasma
- 6ml/100ml = hyperbaric therapy - enough to meet basic demands of tissue with dissolved O2 only

Regarding inductance
- Changes with frequency

capacitor = stores charges. high resistance. slow frequency gives more chance to store charge
inductor = high frequency resistor

Nitrous oxide pressure in a tank is proportional to
- Weight of gas in tank
- SVP at the temperature given

Critical temp is where
- Latent heat of vaporisation is zero - above critical temp substance is all gas thus no further vap possible

Hypoxic pulmonary vasoconstriction
- Is inhibited by nitrous oxide
- Is increased by respiratory but not metabolic acidosis acidosis or alkalosis inhibits HPV

Patient with diabetes insipidis for 4 hours likely to have
- Na 130, K 3?, Osm 155
- Na 155, K3, Osmo 320 DI must have ↑Na ∴ also ↑osm. Generally low K due to ↑tubular flow

Na would be up!

Peristalsis of bowel

- Contraction mediated by cholinergic innervation M3 (gut & lung, eye)
- Relaxation mediated by cholinergic innervation
- Will continue in denervated tissue - if vagus cut will continue. enteric ns

M1 = brain

Countercurrent exchange mechanism

- Is present in bowel villi

Which part of tubule is most susceptible to ischamia with decreased blood flow?

- Collecting duct
- Loop of henle
- Prox tubule

Which part of heart relaxes last

- Base of LV

Regarding lumbar CSF pressure

- Normally 110mmHg? noooo. 14mmhg