VET 433A Antidepressants and Anxiolytic Drugs

Drug Class	MOA	ADME	Clinical Signs	Treatment
Antidepressants and Anxiolytic Drugs (Fluoxetine, Citalopram, Paroxetine)	General goal of increasing the NT serotonin and norepinephrine by blocking their reuptake or decreasing their breakdown 5-HTP > serotonin > Serotonin Syndrome	Most are rapidly absorbed and have a rapid onset of action Many come as extended release	CNS: Agitation, restlessness, vocalization GI: V/D, salivation, abdo pain Neuro: Muscle rigidity, tremors, ataxia, shivering CV: tachycardia, hypertension Misc. Sweating, hyperthermia, tachypnea, transient blindness *Serotonin syndrome!	Decontamination Emesis and activated charcoal with cathartic IVF: hyperthermia B-blockers: Tachycardia and hypertension Methocarbamol: Tremors Diazepam: Seizures Cyproheptadine: serotonin syndrome (serotonin receptor antagonist)
Tricyclic Antidepressants (Amitriptyline, Clomipramine)	Inhibits reuptake of norepinephrine and serotonin from synaptic clefts in CNS Block muscarinic, histamine, and alpha-adrenergic receptors	Readily absorbed, lipophilic, highly protein bound, variable half-life Low margin of safety	Small overdose: Mild sedation, transient anorexia Large overdose: Profound sedation, seizures, cardiac arrhythmias, CV collapse = leading cause of death Serious anticholinergic effects: Mydriasis, blurred vision, dry mouth, tachycardia, urinary retention, slowed GI transit time	Decontamination Monitor ECG look for signs of QRS widening Control seizures with diazepam or phenobarbital
Sleep Aids (Zolpidem, eszopiclone)	Often benzodiazepines or non-benzodiazepine hypnotics Potentiate GABA transmission, increase frequency of chloride channel opening and result in	Time to onset ~ 1-2h Duration of signs ~ 12 h	Paradoxical CNS stimulation rather than expected depression Hyperactivity, agitation, panting, tremors Lethargy, weakness, dullness, ataxia, paresis Nausea, vomiting, diarrhea, hyperthermia	Early use of emetics: AC + cathartic Flumazenil: $GABA_A$ receptor antagonist *only in severe cases Monitor for seizures If paradoxical, do not use benzos, phenothiazines or barbiturates are preferred!

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	inhibition of neuronal excitation			
ADHD Drugs (Dextroamphetamine, Methylphenidate)	All amphetamines or similar Sympathomimetic compounds	Stimulate the release of norepinephrine, dopamine, and serotonin Directly stimulate alpha and beta adrenergic receptors	CNS overstimulation, excessive sympathomimetic effects Agitation, panting, tachycardia, tremors, seizures, coma hyperthermia Rarely depression, weakness, and bradycardia Metabolic acidosis possible	Early emesis Control body temp IVF at 1.5-2x maint Control tachycardia and hypertension (b-blocker) Monitor ECG, body temp, acid/base status and renal function
Acetaminophen	COX pathway inhibitor	Most intoxications involve cats since they do not conjugate the drug well Glucuronidation in the liver	Cats: Methemoglobin, cyanosis, respiratory distress, Heinz body anemia, hematuria and hemoglobinuria, edema of the face/paws, icterus	Early intervention GID N-acetlycystein is antidotal, helps provide a source of cysteine for glutathione replenishment, improves efficacy of sulfation pathway, binds directly with NAPQI Rate limiting amino acid for glutathione synthesis ASMe Ascorbic acids RBC or oxyglobin Cimetidine Rx coagulopathy if present, methylene blue for MetHb if there are no other options
Albuterol	Selective B_2 agonist Less cardiac stimulation		Sinus tachycardia HYPOKALEMIA	Propranolol for tachycardia and hypokalemia

	Used to treat asthma and bronchospasm			Potassium in fluids depending on the severity of the hypokalemia Good prognosis
B-blockers	B-adrenergic antagonists	Rapid absorption Low protein binding Variable metabolism Short half-life Renal excretion	Bradycardia Hypotension Seizures Respiratory compromise Altered mentation/coma	Decontamination IVF Antidote: isoproterenol Vasopressors are NOT recommended
Muscle Relaxants (Baclofen)	Centrally acting skeletal muscle relaxant mimics GABA	Narrow margin of safety	CNS and respiratory depression	IVF to increase excretion Atropine Diazepam Cyproheptadine

***Serotonin Syndrome**

- Best assessed as a totality of signs (toxidrome)
- Autonomic dysfunction, altered mental status, seizures, extrapyramidal syndrome (hyperthermia and muscle rigidity)
- Signs
  - Generalized weakness, anorexia
  - Hypersalivation
  - CNS signs: Agitation, aggression, tremors, ataxia, nystagmus, head tilt, seizures, rigidity, mydriasis
    - Hyperthermia
  - GI signs: Emesis, diarrhea
  - CV signs: Hypertension and tachycardia

Direct Acting Adrenergic Agents

- $Alpha_1$ agonists: vasoconstriction
- $Alpha_2$ agonists: central control of blood pressure
- $Beta_1$ agonists: cardiac stimulation (isoproterenol, dobutamine)

- $Beta_2$ agonists: bronchial relaxation (albuterol)