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General Considerations

Anaesthetic Implications

- major incl:

- ▶ capacity of pt to give consent - most can give consent
- ▶ assoc physical illness eg anorexia nervosa
- ▶ psych med interactions

Practical Problems

Sedation of Agitated Ward Patients

Acute confusional state/delirium:

- Precipitants:
 - pain
 - new environment
 - strangers
- presentation:
 - confused
 - disorientated
 - agitated
 - disinhibited
 - violent
 - hallucinations - visual & auditory
- if acute most likely organic cause
 - ⇒ find & treat it
 - exclude: hypoglycaemia, hypoxia, pain, alcohol withdrawal, full bladder
- differential diagnosis:
 - infection
 - drugs
 - metabolic - electrolytes, BSL
 - head injury
 - stroke
 - acute psych disorder
 - acute porphyria
- Drugs:
 - haloperidol 5mg IV (1mg in elderly) - rpt after 5 min to max 18mg
 - midaz 1-2mg IV - may cause paradoxical disinhibition & ↑ risk of falls
 - alcohol withdrawal ⇒ benzo's orally 5-20mg diazepam
 - ketamine 0.5-1mg/kg IV or 5-10mg/kg/IM in emergencies

Drug Misuse Patients

Table 12.2 Street drugs in common use

Drug	Clinical signs
Cannabis	Tachycardia, abnormal affect (e.g. euphoria, anxiety, panic, or psychosis), poor memory, fatigue
Stimulants: cocaine, amphetamines, ecstasy	Tachycardia, labile BP, excitement, delirium, hallucinations, hyperreflexia, tremors, convulsions, mydriasis, sweating, hyperthermia, exhaustion, coma
Hallucinogens: LSD, phencyclidine, ketamine	Sympathomimetic, weakly analgesic, altered judgement, hallucinations, toxic psychosis, dissociative anaesthesia
Opioids: morphine, heroin, oxycodone	Euphoria, respiratory depression, hypotension, bradycardia, constipation, pinpoint pupils, coma

Opioids

- deserve high quality anaesthetic
- RA & NSAIDs ideal

- opioids may need to be given in high doses
- consent from ex-addicts for opioid use post op

Goals:

1. Adequate analgesia
2. Avoidance of withdrawal
3. Management of drug seeking behaviour

3 groups of patients – IVDU, chronic non-cancer pain, cancer patients

Preoperative assessment management

- focussed history and examination specifically looking at the following:
- usually will be a patient who has a substance dependence behaviour
- dose of naltrexone
- normal dose/intake of opioid (important this is maintained to withdrawal isn't precipitated)
- information major abdominal surgery will induce severe pain
- discuss and advice epidural or rectus sheath siting if no contra-indications (spare opioids required)
- major co-morbid conditions associated with IVDU:
 - ▶ murmurs,
 - ▶ history of endocarditis,
 - ▶ stigmata of endocarditis,
 - ▶ IV access issues
- use of other analgesics (methadone) or recreational drugs (medications)
- smoking history
- social support

Intraoperative management

- site epidural
- ensure has taken all treatments
- ensure naltrexone stopped 24 hours prior to operation
- careful titration of opioids to perceived pain
- BIS monitoring
- good anxiolysis

Post-operative management

- close monitoring in 36-72 hours for withdrawal – yawing, sweating, lacrimation, anxiety, rhinorrhoea, tachycardia, diarrhoea, nausea, vomiting, abdominal pain and cramps.
- regular non-opioid analgesia: paracetamol, tramadol and NSAIDS
- if using PCA must set a background rate equivalent to their normal daily intake
- increase dose until analgesia achieved or side-effects limit increase
- once analgesia controlled -> reduce opioid intake 20%/day until pre-admission levels achieved
- clonidine = good agent to treat withdrawal
- use an objective measurement when assessing pain (ability to cough), pain scores are less reliable
- liaise with patients A&D consultant

Cocaine

- toxicity = central & periph adrenergic stimulation:
 - ▶ CVS: ↑HR, HTN, arrhythmias, coronary spasm, infarction, death
 - ▶ neuro: intracerebral vasospasm ⇒ stroke, rigidity, hyperreflexia, hyperthermia
 - ▶ resp (inhalation of powder): alveolar haemorrhage, APO
 - ▶ psych: elation ⇒ enhanced physical strength ⇒ paranoid psychosis
- if need surgery following ingestion ⇒ ICU to stabilise pre-op
- life threatening problems related to vasospasm - reverse with:
 - ▶ vasodilators
 - ▶ antiarrhythmic agents
 - ▶ β blockers
- titrate small doses of vasopressors intraop
- intra-arterial cocaine injection ⇒ critical limb ischaemia:

- ▶ regional plexus block
- ▶ IV heparin
- ▶ stellate ganglion block
- ▶ intra-arterial vasodilators
- ▶ urokinase
- ▶ early fasciotomy

Ecstasy

- =MDMA
- stimulant related to amphetamine
- problems =
 - ▶ ↑temp >39
 - ▶ DIC
 - ▶ dehydration ⇒ excessive ADH release (or water ingestion) ⇒ ↓Na ⇒ coma

By Disease

Anxiety

- extremely common peri-op:
 - explanation
 - reassurance
 - oral premed
 - IV sedation
- Acute or chronic symptoms

Dementia

Preoperative

- = irreversible global deterioration in higher mental functioning
- causes:
 - Alzheimer's - 50%
 - MID
- increases with age
- mean life expectancy = 7yr from diagnosis

HISTORY

- confusion
- wandering
- memory loss
- unable to perform ADL's
- disorientation
- withdrawn

EXAMINATION

- low AMT

INVESTIGATIONS

- dementia screen
- CT head

MANAGEMENT

- supportive
- anticholinesterase drugs
- consent will be problematic

Intraoperative

- if on anticholinesterase drugs -> prolong the action of sux and antagonise the action of NDNMBD
- ketamine can be good agent for positioning/regional anaesthesia
 - ↳ may seen paradoxical agitation with midaz
- ↑ risk of POCD

Anorexia Nervosa

Preoperative

- = chronic, severe, multi-system disorder which is rooted in a fear of becoming fat with deliberate weight loss
- highest mortality of any psych disorder
- 0.3% of females (bulimia nervosa 1%)

- ages 13-20

CLINICALLY

- thin
- psych comorbidities: major depression, anxiety, OCD
- drug misuse - laxatives, emetics, diuretics
- evasive historian
- malnutrition & starvation \Rightarrow cachexia, hair loss, OP
- immunosuppression at <50% of normal body weight
- panhypopituitarism features: hypothyroid, loss glycaemic control, amenorrhoea
- CVS: bradycardia, hypotension
- risk of cardiac failure if over-filled intraop
- delayed gastric emptying

INVESTIGATIONS

- \downarrow Cl, \downarrow Ca, \downarrow K metabolic alkalosis - from excessive stomach fluid loss
- ECG changes in up to 80%: AV block, ST depression, TWI, prolonged QT, arrhythmias

MANAGEMENT

- rehydrate
- fix electrolytes
- avoid re-feeding - dangerous so avoid

Intraoperative

- cautious fluid therapy as can precipitate cardiac failure
- loss of lung elasticity \rightarrow high AWP
- RSI
- NMB - potentiated if \downarrow K & \downarrow Ca
- pressure cares
- avoid hyperventilation
- hypothermia cares
- avoid neostigmine if possible - risk of arrhythmia

Alcohol Abuse

Preoperative

- stages:
 - ▶ 1. fatty infiltration \rightarrow
 - ▶ 2. alcoholic hepatitis \rightarrow
 - abdo pain
 - weight loss
 - jaundice
 - fever
 - ▶ 3. cirrhosis
 - jaundice
 - ascites
 - portal HTN
 - hepatic failure

HISTORY

- increased ET-OH intake
- abdo pain
- weight loss
- jaundice
- hypoglycaemia

EXAMINATION

- fever
- jaundice
- ascites
- portal hypertension
- hepatic failure
- alcoholic cardiomyopathy

INVESTIGATIONS

- ECHO: dilated, hypokinetic LV, decreased EF
- BSL
- LFTS
- Coags

MANAGEMENT

- stop drinking
- avoid non-emergency surgery
- hydrate
- support glucose and electrolytes
- IV vitamins
- correct clotting

Intraoperative

- acutely intoxicated:
 - ▶ decreased anaesthetic requirements
 - ▶ RSI
 - ▶ check for ↓BSL
- chronic user:
 - ▶ increased anaesthetic requirements
 - ▶ 2-5 fold ↑ in post op complications

Postoperative

- monitor for withdrawal -> diazepam
 - ↳ most can tolerate 24 hr withdrawal
- withdrawal seizures:
 - ▶ 6-48hr post cessation alcohol
 - ▶ cluster over few days common
 - ▶ ↓K & ↓Mg predispose
 - ▶ use benzo's

BiPolar Affective Disorder

Preoperative

= recurrent episodes of altered mood and activity with both mania and depression

HISTORY

- increased risk in females
- peaks in early 20's
- may lack insight when manic

MANAGEMENT

- mood stabilizers (lithium, carbamazepine or valproate)
- continue throughout perioperative period

Depression & Anti-Depressants

Preoperative

- = persistent low mood + cognitive and functional impairment
- monoamine theory of depression = deficiency of serotonin & noradrenaline in CNS

HISTORY

- incidence 10-20%
- F:M 2:1
- peak incidence in late 20's

MANAGEMENT

1. TCA's

- mostly now replaced by SSRI's
- block the re-uptake of amines from the synaptic cleft by competition
- need to be given for 2-4 weeks before they are effective
- side effects (anticholinergic) : dry mouth, sedation, blurred vision, urinary retention, constipation, postural hypotension
- toxicity: agitation, delirium, respiratory depression, coma, QT prolongation -> alkalinise plasma \Rightarrow \downarrow free drug
- anaesthesia:
 - ▶ keep TCAs going,
 - use direct acting sympathetomimetics in small doses (\uparrow sensitivity) eg pheny, adren, norad (avoid ephedrine/metaraminol)
 - be careful of delayed gastric emptying,
 - avoid atropine (\uparrow risk confusion)
 - avoid tramadol (CNS toxicity)

2. SSRI's

- inhibit presynaptic reuptake of serotonin from synaptic cleft and are much less toxic than TCA's
- side effects: nausea, vomiting, diarrhoea, insomnia, agitation, tremor, headache, sexual dysfunction, SIADH, platelet inhibition -> prolongation of bleeding time, risk of coronary vasoconstriction
- beware of Serotonin Syndrome – precipitants: TCA's, MAOI's, pethidine, tramadol
- they inhibit cytochrome P450 and prolong the actions of: warfarin, phenytoin, carbamazepine, benzodiazepines, flecanide and some NSAIDs
- anaesthesia: keep going perioperatively, check U+E (r/o \downarrow Na), check coags, cautious use of benzodiazepines, avoid agents that may precipitate serotonin syndrome
- serotonin syndrome:
 - ▶ = toxic crisis from \uparrow synaptic serotonin in brainstem & spinal cord
 - ▶ causes: overdose of SSRI or combo with other serotonin drugs - TCAs, MAOIs, pethidine, tramadol
 - ▶ symptoms:
 - early: agitation, confusion, rigidity, myoclonus, hyperreflexia, autonomic instability (fever, \uparrow HR, diarrhoea, \uparrow \downarrow bp)
 - late: seizures, oculogyric crises, DIC, rhabdo, myoglobinuria, AKI, arrhythmia, coma, death
 - ▶ can mimic neuroleptic malignant syndrome
 - ▶ supportive treatment \Rightarrow cooling, benzo's, cryopheptadine
 - ▶ episode generally lasts <24hrs

3. MAOI's

- now 3rd line antidepressants
- MAO is found in mitochondrial membranes and metabolises serotonin, noradrenaline, adrenaline and other amines

- 2 types of MAO:
 - ▶ A =
 - metabo serotonin, norad, adren.
 - Mostly found in CNS
 - ▶ B =
 - makes up 75% of all MAO activity
 - metabo non polar aromatic amines eg phenylethylamine, methylhistamine
 - found in liver, lungs, non neural cells
- Tyramine & dopamine = substrates for both A & B
- irreversible binding = tranylcypromine, phenelzine, isocarboxazid (regeneration takes 3 weeks)
- reversible binding = moclobemide (A), linezolid (antibacterial for MRSA) (non selective) , selegiline (B) (parkinsons disease)
- anaesthesia:
 - ▶ stop moclobemide for 24 hours,
 - ▶ stop irreversible agents for 2 weeks (discuss with psychiatrist!),
 - ▶ drugs:
 - avoid pethidine
 - avoid indirect sympathomimetics metab'ed by MAO ⇒ greatly exaggerated effects ⇒ displace NA from vesicles in huge amounts ⇒ HTN crisis
 - use
 - IVF
 - only direct acting sympathomimetics (pheny, adren, norad) and use cautiously as ↑ed effect
 - cautious use of opioids -
 - morphine gold standard - but no direct evidence of probs with fentanyl/alfentanil/remi
 - prolonged duration of action - naloxone if required
 - avoid serotonin syndrome inducing agents (see above)
 - phenelzine -> beware of prolonged action of sux
 - avoid pancuronium (releases stored NA), avoid cocaine
 - ▶ selegiline - safe to continue if doses <10mg/d (but avoid pethidine)
 - ▶ ∴ safe drugs: propofol, roc/atrac, sevo/des/N2O, NSAIDs, benzo's, LAs without adrenaline, atropine/glyco
 - ▶ RAs ideal

Table 12.1 Drug interactions with MAOIs

Drugs to be avoided	Reason	Suitable alternative
Pethidine, tramadol, dextromethorphan	Risk of serotonin syndrome	Morphine, fentanyl
Ephedrine, metaraminol, cocaine	Hypertensive crises	Phenylephrine, noradrenaline
Pancuronium	Releases stored noradrenaline	Vecuronium, atracurium
Suxamethonium	Phenelzine only (decreased cholinesterase activity)	Mivacurium, rocuronium

4. Antipsychotics

- antipsychotics ie haloperidol, chlorpromazine, olanzapine, quetiapine, risperidone
- actions to
 - ▶ antagonise D2 receptors in CNS
 - ▶ also antagonises: H1, 5HT2, α-adrenergic, muscarinic receptors
- SEs:
 - ▶ main = sedation, extrapyramidal, tardive dyskinesia, prolonged QT
 - ▶ other = weight gain, post hypotension, antimuscarinic effects, jaundice, agraulocytosis (esp clozapine)
- potentiate sedative & hypotensive effects of anaesthetic agents - incl opioids

5. Lithium

- inorganic ion
- low therapeutic index (0.4-1.0mmol/L)

- acts like Na⁺ and able to move through ionic channels, accumulating intracellularly ⇒ partial depolarisation of cell
- can cause weight gain, renal impairment, T wave flattening or inversion and hypothyroidism
- toxicity (>1.5)
 - precipitants: ↓Na, diuretics, renal disease
 - symptoms: lethargy, restlessness, nausea, vomiting, thirst, tremor, polyuria, renal failure, ataxia, convulsions, coma, death -> can be treated with dialysis
- potentiates depolarising and non-depolarising NMBD (use PNS)
- NSAIDS should be used with caution

5. St Johns Wort

- extract plant contains several alkaloids similar to TCAs
- useful & safe as monotherapy in mild depression
- may induce CYP450 enzymes ⇒ ↑elimination of warf, dig, theophylline, OCP
- May interact with SSRIs
- should stop 5d pre-op

Neuroleptic malignant syndrome

- rare reaction to anti-dopaminergic which can mimic MH
- young, female
- classic triad of:
 - extrapyramidal dysfunction ⇒ rigidity & dystonia
 - Fever
 - autonomic instability (↑HR, sweating, labile bp, salivation, urinary incontinence)
- ↑CK & WCC
- mortality ~20%
- supportive care in ICU:
 - withdrawal of antipsychotics
 - cooling care
 - aggressive IVF +/- dialysis if required
 - drugs:
 - benzo's - agitation & seizures
 - dantrolene - mm rigidity
 - bromocriptine & apomorphine - dopaminergic effects

Schizophrenia

Preoperative

= psychotic disorder

HISTORY

- 1% of population
- M=F
- peak incidence in teens
- thought echo
- withdrawal
- hallucinations
- delusion perceptions
- poverty of thought
- flat or incongruous affect
- amotivation
- high suicide risk

EXAMINATION

- agitation
- catatonia

- withdrawn
- uncommunicative

MANAGEMENT

- antipsychotic drugs -> continue them preoperatively
- most are dopamine antagonists (D2 receptors) + antagonism of other receptors (histamine, serotonin, Ach, alpha-adrenergic)
- side effects: sedation, extrapyramidal side-effects, tardive dyskinesia, gynaecomastia, weight gain, postural hypotension, obstructive jaundice, agranulocytosis.
- many drugs prolong the QT interval
- rarely develop NMS

Intraoperative

- beware of hypotension and additive sedation