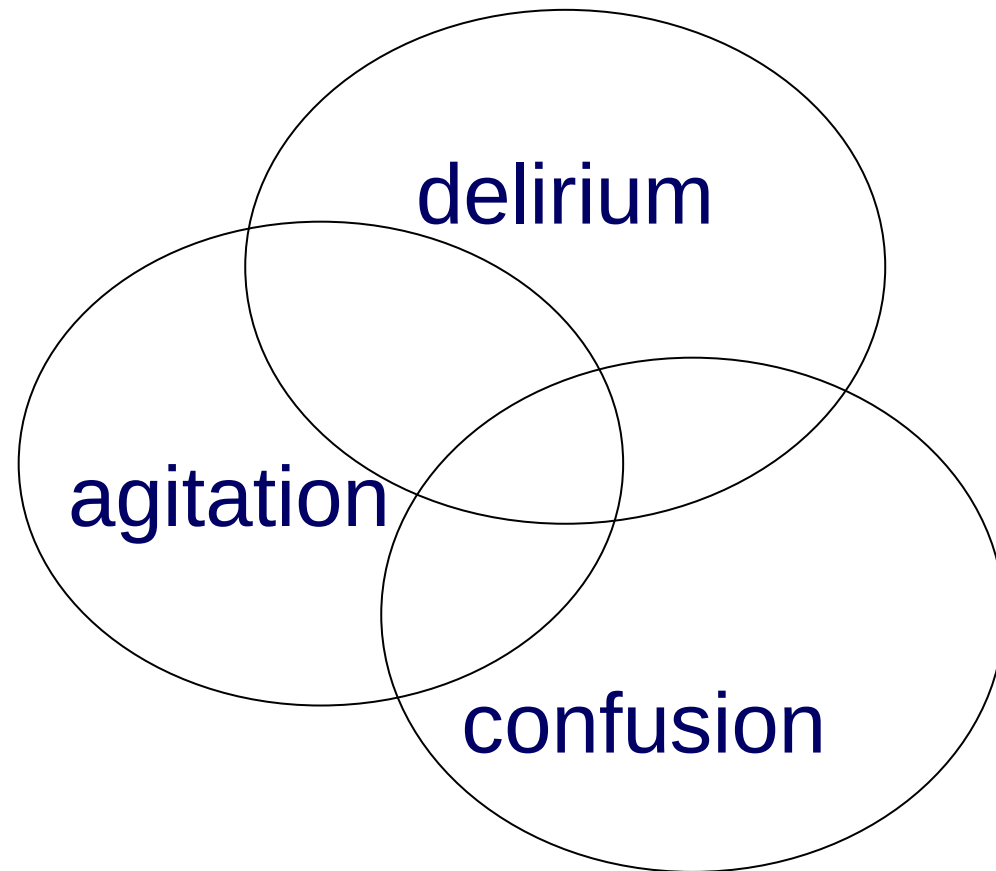


Postoperative confusion/agitation

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Postoperative behavioral disorders



Definition. Epidemiology

- Postoperative apparently unexplained motor hyperactivity
- Occurs in the PACU, the surgical ward or the ICU
- Average incidence: 11-40%

Delirium diagnostic scale (CAM-ICU scale)

Ely EW et al JAMA 2001; 286: 2703-10

- 1. Acute onset and fluctuating course
- 2. Inattention
- 3. Disorganized thinking
- 4. Altered level of consciousness

- Delirium = 1 + 2 ± (3 or 4)

Consequences of postoperative confusion/agitation on outcome.

- Increase in the incidence of major complications (*Dubois MJ et al Intensive Care Med 2001; 27: 1297-304*)
- Increase in the incidence of admission into rehabilitation centers (*Marcantonio ER et al Br J Psychiatry 2001; 179: 288-9*)
- Increase in duration of in-hospital stay (*Aldemir M et al Crit Care Clin 2001; 5: 265-70*)
- Predictive factor of mortality (*Marcantonio ER et al Br J Psychiatry 2001; 179: 288-9*)

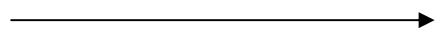
Risk factors for postoperative confusion/agitation

- Aging
- Underlying disease
- Medications
- Type of surgery
- Environmental factors

Aging

- Pharmacokinetic changes

- Increased distribution volume of lipophilic agents
- Decreased binding of drugs to plasma proteins
- Reduction in the central compartment
- Decrease in hepatic blood flow and glomerular filtration



DRUG ACCUMULATION

- Pharmacodynamic changes

- Clinical data (Jacobs JR et al Anesth Analg 1995; 80: 143-8)
- Experimental data (Keita H et al Br J Anaesth 1998)

**Moller et al.
Lancet 1998; 351: 857-62.**

Risk factor	3-month test (n=910)	
	p	Odds ratio (95% CI)
Age (difference of 10 years)	0.0001	2.1 (1.4-2.9)
Hypoxaemia*	0.60	1.2 (0.6-2.4)
Hypotension†	0.54	0.9 (0.5-1.4)
Benzodiazepines before surgery	0.03	0.4 (0.2-1.0)
Centre	0.18	..

*Oxygen saturation $\leq 80\%$ for > 2 min.

†Mean arterial blood pressure $\leq 60\%$ for ≥ 30 min.

**Relation of major risk factors to results of
3-month test**

Underlying disease

- Neuropsychiatric disorder
- Parkinson's disease
- Drug addiction
- Alcoholism

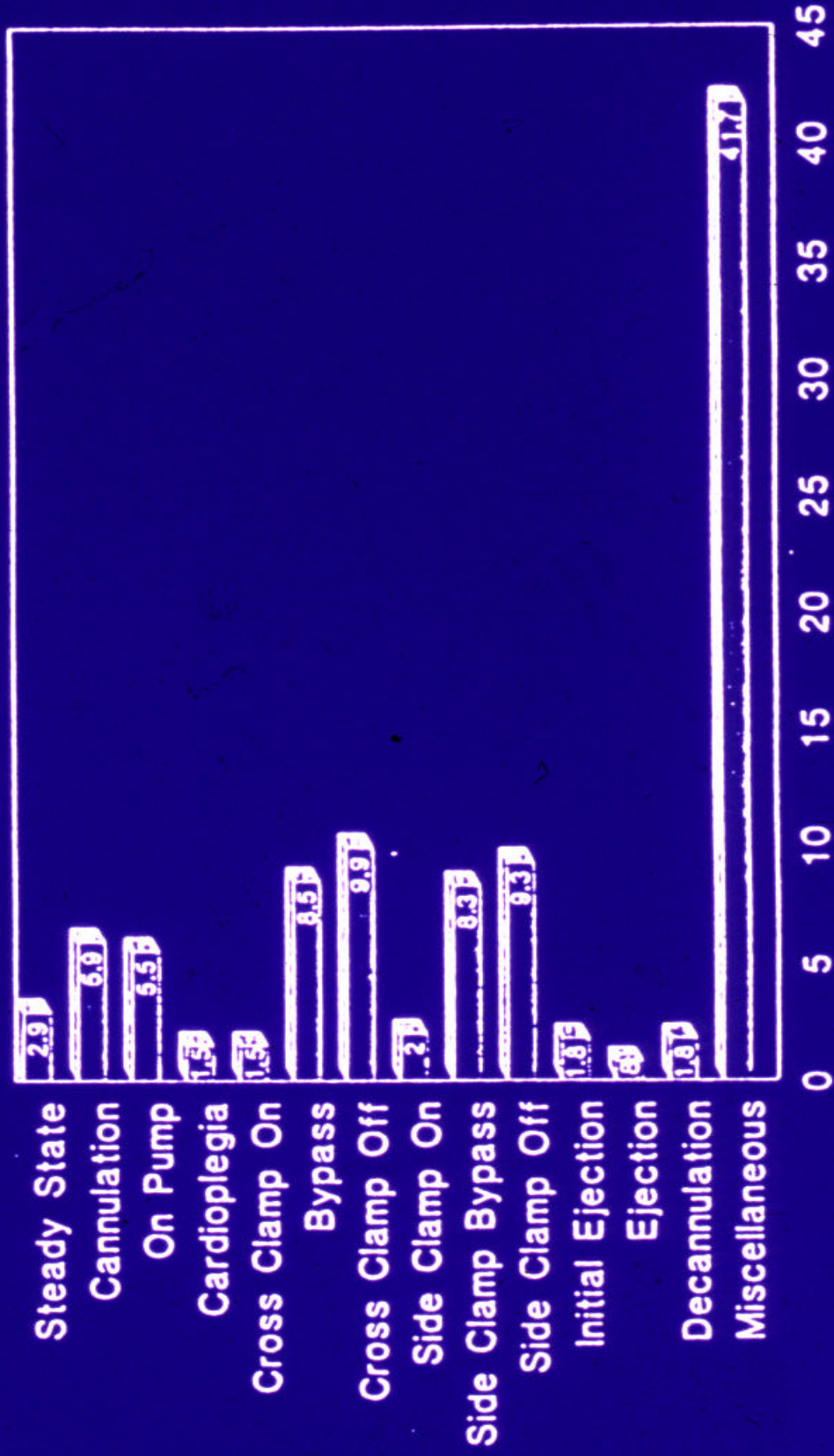
Surgical procedures

- Endogynecologic procedures
- Ocular surgery
- Endourologic procedures
- Cardiac surgery, carotid surgery (embolic mechanisms)

Percentage of Emboli Counted at Different Times

During CABG Surgery

n = 196



Role of anesthetic technique ?

- Regional versus general anesthesia: no difference (10/11 studies).

Other factors

- Pain
- Sleep disorders
- Discomfort
- Anxiety
- ...

Management principles of postoperative confusion/agitation

- Emergency +++
- Rule out:
 - Intense pain
 - Urinary retention
 - Obstruction of orotracheal tube
- Quickly search for life-threatening organic causes
- Consider administration of psychotropic agents

Causes of postoperative confusion/agitation

- Hypoxemia
- Hypotension
- Metabolic disorders
 - Hypoglycemia
 - Hyponatremia
 - Hypercalcemia
- Drugs
 - Residual effects of anesthetics:
 - Ketamine, propofol
 - local anesthetics
 - Anticholinergics
 - Residual effects of muscle relaxants
 - Antibiotics, corticosteroids...
- Sepsis (+++)
- Delirium tremens
- Withdrawal syndrome
- Cerebral embolism

Traitement d'une agitation aiguë en réanimation:

- Le temps de la communication est passé...
- Identifier et traiter une cause organique
- Médicaments de choix:
 - L'augmentation des doses de benzodiazépines chez le patient ventilé a des limites d'efficacité et hémodynamiques
 - Les neuroleptiques (haloperidol iv 1 -5 mg puis en perfusion continue; loxapac 50 à 300 mg im) sont les agents de choix
 - Intérêt des alpha2-agonistes (clonidine, dexmedetomidine)

Confusion/agitation: prevention

- Identify predisposing factors
- **Multimodal strategy** (*Inouye SK et al N Engl J Med 1999; 340: 669-76*)
 - 852 patients aged >70
 - Randomized to intervention group vs standard care group
 - Intervention: control of cognitive deterioration, sleep disorders, immobility, dehydration, auditive or visual impairment
 - Significant reduction (9% vs 15%) of incidence and duration of delirium episodes