Quiz 35

Postoperative delirium
- Px and Rx

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This quiz is being published on behalf of the Education Committee of the SNACC.
1. A 86 Y/O FEMALE PATIENT IS SCHEDULED FOR EMERGENT LUMBAR 3-4 DISCECTOMY FOR URINARY RETENTION AND LOWER EXTREMITY WEAKNESS. **ALL OF THE FOLLOWING STATEMENTS ARE TRUE REGARDING POSTOPERATIVE DELIRIUM (POD) EXCEPT:**

A. Prevention is the most effective strategy in minimizing occurrence of POD.
B. Multimodal strategies could be used for prevention.
C. Risk stratification does not impact POD.
D. Higher incidence of delirium in emergency surgery.
A. PREVENTION IS THE MOST EFFECTIVE STRATEGY IN MINIMIZING OCCURRENCE OF POD.

This is true. Prevention could be the most effective strategy to prevent postop delirium. In hospitalized patients 30-40% of cases of POD can be prevented by early intervention. The Hospital elder life Program (HELP) is an innovative strategy of hospital care for elderly patients that uses tested delirium prevention strategies to improve overall quality of hospital care.

B. MULTIMODAL STRATEGIES COULD BE USED FOR PREVENTION.

This is true. Multimodal strategies, be it behavioral or pharmacological, could be used in an effort to counter delirium resulting from diverse causes such as neurotransmitter imbalance, pain, infection, metabolic abnormalities and sleep disorders.

C. RISK STRATIFICATION DOES NOT IMPACT POSTOP DELIRIUM.

This is false. Development of POD depends on various preexisting risk factors which should be verified preoperatively like age more than 65, preexisting cognitive dysfunction, poor vision, hearing loss, severe systemic disease, infection. Patients with 2 or more of the risk factors are more prone to develop POD.

This is true. There is a higher incidence of POD in emergency surgery than in an elective surgery.

2. A 69Y/O FEMALE PATIENT UNDERGOES A HIP REPLACEMENT SURGERY. WHICH OF THE FOLLOWING IS A TRUE STATEMENT REGARDING PHARMACOLOGICAL STRATEGIES IN PREVENTING POSTOP DELIRIUM?

A. Cholinesterase inhibitors reduce the incidence of POD.
B. Current evidence for antipsychotic prophylaxis for POD is insufficient.
C. Diphenhydramine can be beneficial in preventing POD.
D. Gabapentin increases risk of POD.
A. CHOLINESTERASE INHIBITORS REDUCE THE INCIDENCE OF POD.

This is False. The central cholinergic system is strongly implicated in the neuropathogenesis of delirium. Also, the prevalence of delirium is higher in patients with an increased serum anticholinergic activity level. Hence one would consider cholinesterase inhibitors to be beneficial.

But none of the studies confirmed the efficacy of these drugs (like Rivastigmine and donepezil were given preoperatively) in prevention of POD. On the contrary there were more adverse effects and increased mortality.

B. CURRENT EVIDENCE FOR ANTIPSYCHOTICS PROPHYLAXIS FOR POD IS INSUFFICIENT.

This is true. There is limited, contradictory and inconsistent support in literature to support prophylactic use of antipsychotics like haloperidol, for prevention of POD. There is more potential harm than benefit, like CNS effects (such as somnolence, extrapyramidal effects such as muscle rigidity, tremor, restlessness, swallowing difficulty, decreased seizure threshold, and neuroleptic malignant syndrome), systemic and cardiovascular effects (such as QT prolongation, dysrhythmias, sudden death, hypotension, and tachycardia).

This is False. The chemical basis of delirium remains either a diffuse excess of brain dopaminergic activity, a diffuse deficit in brain cholinergic activity, or both. Drugs which can cause a muscarinic blockade can lead to delirium. Diphenhydramine, an anticholinergic is a muscarinic antagonist, and also blocks reuptake of dopamine and hence cause delirium.

D. GABAPENTIN INCREASES RISK OF POD

This is False. Adequate postoperative analgesia is associated with decreased delirium. Gabapentin, an anticonvulsant often used for neuropathic pain, also helps decrease post-operative pain.

Leung et al published a pilot clinical trial using gabapentin to control post-operative pain and hence prevent POD. There was a reduction of post-operative delirium in the gabapentin group compared to placebo (0% versus 41.7%, p = .045)

3. All of the following statements regarding the impact of intraoperative anesthetic management on the development of postop delirium are correct except

A. Addition of Ketamine may aide in prophylaxis of POD.
B. Depth of sedation during spinal anesthesia has no impact on the development of POD.
C. Additional regional block may reduce risk of POD.
D. Dexmedetomidine sedation may prevent POD.
A. ADDITION OF KETAMINE MAY AIDE IN PROPHYLAXIS OF POD.

This is true. Ketamine, an N-methyl-d aspartic acid (NMDA) antagonist, reduces neuronal cell loss in the cortex by preventing excitotoxic injury and apoptosis after cerebral ischemia. In addition, ketamine may confer neuroprotection by suppressing the inflammatory response to surgery systemically and in the central nervous system. Less postoperative delirium was found in patients receiving additional ketamine (0.5 mg/kg intravenously, single bolus) for anesthesia induction compared to standard methods (3.45% vs. 31.03%; ketamine vs. standard, P = 0.012)

This is false. A study was conducted with BIS monitoring keeping BIS of 50 for deep sedation and 80 for light sedation. The study showed an increased incidence of postoperative delirium (40.4% vs. 19.3%; deep sedation vs. light sedation, \( P = 0.014 \)) and a significant longer duration of delirium (1.4 ± 4.0 vs. 0.5 ± 1.5 days; deep sedation vs. light sedation, \( P = 0.01 \)) in the deep-sedated patients.

C. ADDITIONAL REGIONAL BLOCK MAY REDUCE THE INCIDENCE OF POD

This is True. Additional facia iliaca block in elderly patients undergoing hip surgery showed decreased incidence, reduced severity and duration of POD.

This is true. Dexmedetomidine, an alpha-2 adrenoreceptor agonist, was more effective than other sedatives in preventing postoperative delirium, reducing the severity and duration of POD.

4. AMERICAN GERIATRICS SOCIETY CLINICAL PRACTICE GUIDELINES MAKE ALL OF THE FOLLOWING RECOMMENDATIONS FOR TREATMENT OF POSTOP DELIRIUM EXCEPT:

A. Nonpharmacological interventions by an interdisciplinary team.
B. Regional anesthesia for pain control.
C. Benzodiazepines are recommended in the treatment of agitation associated with delirium.
D. Antipsychotics may be used for treatment of agitation associated with delirium.
This is true. Nonpharmacological intervention programs delivered by an interdisciplinary team (including physicians, nurses, and possibly other healthcare professionals) for the entire hospitalization in at-risk older adults undergoing surgery help prevent and treat delirium. The managing team should perform daily rounds providing both general and specific recommendations.
B. REGIONAL ANESTHESIA FOR PAIN CONTROL

This is true. Regional anesthetic at the time of surgery and postoperatively to improve pain control and prevent delirium in older adults. Recommendation is weak as there could be complications of block placement, but benefits outweigh the harm.

C. BENZODIAZEPINES ARE RECOMMENDED IN THE TREATMENT OF AGITATION ASSOCIATED WITH DELIRIUM.

This is false. Benzodiazepines should not be used as a first-line treatment of the agitated postoperative delirious patient (who is threatening substantial harm to self and/or others, except for treatment of alcohol or benzodiazepine withdrawal). In general, all benzodiazepines increase risk of cognitive impairment and delirium because the GABA receptors are downregulated. They may even cause paradoxical effects (disinhibition phenomena), such as agitation, aggression, agitation, insomnia, and euphoria.

D. ANTIPSYCHOTICS MAY BE USED FOR TREATMENT OF AGITATION ASSOCIATED WITH DELIRIUM

This is true. Antipsychotics may be used at the lowest effective dose for the shortest possible duration to treat patients who are severely agitated or distressed, and are threatening substantial harm to self and/or others. In all cases, treatment with antipsychotics should be employed only if behavioral interventions have failed or are not possible, and ongoing use should be evaluated daily with in-person examination of patients.

A 75 year old male patient undergoes lumbar laminectomy and fusion surgery. Which of the following interventions is **NOT** a part of nonpharmacological acute treatment strategies for postop delirium:

A. Reorientation and behavioral intervention.
B. Nonpharmacological sleep protocol should be implemented.
C. Maintain quiet environment.
D. Physical restraints aide in sleep hygiene.
A. REORIENTATION AND BEHAVIORAL INTERVENTION

This is true. Patients should be provided with their hearing aides and/or eye glasses to minimize sensory impairments. Family should be present in the room to provide familiar atmosphere.

B. NONPHARMACOLOGICAL SLEEP PROTOCOL SHOULD BE IMPLEMENTED

This is true. In this protocol, patients are offered a glass of warm milk or herbal tea; relaxation tapes or relaxing music; and back massage. This protocol has been demonstrated to be both feasible and effective, and, in one study, implementation of this strategy reduced the use of sleeping medications from 54% to 31% (P <0.002) in a hospital environment.

This is true. Maintaining quiet environment by limiting staff visits, with minimal noise allows an uninterrupted sleep and helps with reduction of POD. Limiting room and staff changes, having ambient lighting also helps in the management of POD.

D. PHYSICAL RESTRAINTS AIDE IN SLEEP HYGIENE.

This is false. Physical restraints actually worsen delirium, make the patients more agitated and prolong the duration of POD.