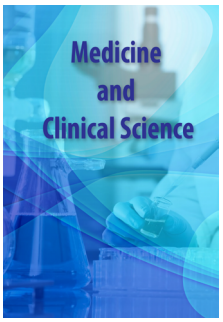
Medicine & Clinical Science

Short Communication



Anesthesia in Psychiatric Patients

Evangelia Michail Michailidou

ICU Director at General Hospital of Agrinio, Greece

Correspondence

Evangelia Michail Michailidou

ICU Director at General Hospital of Agrinio, Greece

E-mail: evamichailidou@yahoo.gr

- Received Date: 25 May 2023
- Accepted Date: 15 Jun 2023
- Publication Date: 21 Jun 2023

Anesthesiologists are particularly familiar with neurophysiology: anesthetic pharmaceutical agents have the Central Nervous System (CNS) as their primary - if not exclusive - site of action. Cerebral circulation, its management, and its changes during anesthesia concern the anesthesiologist every day, not only when dealing with neurosurgical cases but very often in every surgical patient: history of stroke, transient ischemic attack (tIA), or presence of extracranial carotid stenosis in patients who will undergo an unrelated operation belong to the daily anesthetic practice.

The other, non-organic (for now) or better, non-macroscopic side of the brain is less known to the anesthesiologist. It is a fact that psychiatric disorders occur less frequently than organic lesions of the CNS in surgical patients. In conjunction with that, no particular anesthetic technique is required, and the perioperative degradation of or ignoring these diseases is common practice. Nevertheless, the anesthetist must have basic knowledge of psychiatric diseases, the therapeutic techniques where it is called upon to contribute, and, above all, the pharmaceuticals administered to psychiatric patients. Their potential drug interactions with anesthetics and other perioperative drugs may result in increased perioperative morbidity and mortality.

Schizophrenia

This disorder occurs (with a probability of disease) in 1–1.5% of the adult population Z. It equally offends both sexes and all social, racial, etc. groups. 3. There is a genetic predisposition to the manifestation of schizophrenia, with strong but as yet unconfirmed evidence for genes on chromosomes 6 and 13. It is thought that this is due to excessive dopaminergic activity in the brain. Schizophrenic patients show disorganized thinking, withdrawal, paranoid ideation, and auditory hallucinations. They have a 50-fold higher rate of suicide than the general population, with 10% of patients succeeding and 40% attempting at least once. High vigilance and close monitoring should be in place perioperatively in schizophrenic patients after a suicide attempt as it is not excluded from repetition, but there have also been reported incidents of attempted suicide after general anesthesia in schizophrenic patients. 4. Frontal lobe dysfunction in schizophrenia is said to be responsible for the particularly high proportion of heavy smokers among sufferers.

The only effective treatment for controlling schizophrenia remains the administration of antipsychotic drugs.

All the above factors exert their antipsychotic action mainly by antagonizing dopamine at its receptors in the CNS and exhibit similar properties with minimal differences. They also generally have little anticholinergic and -adrenergic blocking activity. They are all strong antiemetics. Most cause sedation and slight anxiolysis.

Adverse effects include orthostatic hypotension, acute dystonic reactions, and other extrapyramidal manifestations, such as malignant neuroleptic syndrome, as revealed by the ECG: flattening of T, segmentation of ST, prolongation of PR, and QT. Also seizures and agranulocytosis.

In general, atypical antipsychotics have fewer side effects than typical antipsychotics, but they have a higher cost. Perioperatively, patients with schizophrenia under good medical control do not present particular problems. Continuation of antipsychotics perioperatively is desirable. In theory, anesthetic needs to be impaired (MAC). -adrenergic blockade usually does not cause particular problems as patients compensate satisfactorily. Of the anesthetic drugs, enflurane and ketamine should be avoided as antipsychotics decrease seizure threshold. It is pointed out that due to smoking, these patients present with a high percentage of

Citation: Michailidou EM. Anesthesia in Psychiatric Patients. Med Clin Sci. 2023;5(5):1-4.

diseases related to coronary artery disease, chronic obstructive pulmonary disease, pulmonary disease, and vascular diseases.

Malignant neuroplex syndromes

This is a rare syndrome and a complication of it from antipsychotic treatment that occurs hours up to months after starting treatment in 0.07–2.2% of patients under antipsychotics (2/3 within the first week of antipsychotic administration). It is caused by a disturbance of thermoregulation and extrapyramidal control of skeletal muscle caused by dopaminergic D2 blockade in the hypothalamus and basal ganglia, as well as by peripheral calcium release from the sarcoplasmic reticulum. May reach the severity of malignant hyperthermia, from which it is difficult to distinguish whether it occurs intra- or post-operatively. Clinically, muscle stiffness, hyperthermia, rhabdomyolysis (high creatine kinase levels), dysautonomia, and an impaired level of consciousness are observed. Mortality reaches 20–30% and is usually due to dysrhythmias or renal failure.

Differential diagnosis includes: manic-depressive disorder, lethal catatonia, malignant hyperthermia, hyperthermia, infections of the CNS, status epilepticus, traumatic stroke damage, brain neoplasms, acute intermittent porphyria, and tetanus.

Therapeutically, dantrolene is administered as in malignant hyperthermia. It can also be administered with bromocriptine and amantadine. At the same time, patients are supported depending on the clinical picture, usually in ICU contexts. Perioperatively, patients with a history of malignancy-related neuroleptic syndrome should be treated as high-risk for malignant hyperthermia.

Depression

Incidence (new cases per year) 1% in men, 3% in women Prevalence (sufferers) 2-3% in men, 5–10% in women. During their lifetime, 10% of men and 20% of women will develop major depression. 3.

The condition has multifactorial causes (genetic, biochemical, environmental, etc.). It is considered that its manifestations are due to a deficiency of dopamine, norepinephrine, and serotonin in the brain (or reduced activity of the corresponding receptors). But there are other endocrine disorders: people who oversecrete cortisol in stressful situations are at increased risk for depression, while patients with depression have elevated cortisol levels and disturbances in its circadian secretion. It is characterized by constant feelings of sadness, anxiety, or lack of interest in daily activities, as well as anhedonia, with no obvious organic or external cause. Thoughts of death and suicide are very common, as are suicide attempts. Modern pharmacological treatment includes three classes of antidepressants that increase dopamine levels, norepinephrine, and serotonin in the brain.

For resistant and severe cases of depression as well as for prophylaxis after its pharmacological remission, the application of electroconvulsive therapy (ECT) is constantly increasing, as the use of general anesthesia has made it widely accepted.

Tricyclic antidepressants13

Tricyclic antidepressants are used in the treatment of depression as well as chronic pain, especially neuropathic pain. Anesthesiologists who deal with the pain clinic are particularly familiar with tricyclic antidepressants. Their anti-depressant and analgesic action is due to their inhibition of presynaptic reuptake of serotonin (all factors) and norepinephrine (esperipramine). They seem to intensify the action of opioids. They, especially amitryprilin, have a significant antimuscarinic effect (dry mouth, prolonged gastric emptying, urinary retention). They are observed in the electrocardiogram as sertraline, paroxetine, and quinidine-type disturbances: flat or inverted T and prolongation of PR, QRS, and QT intervals. The seizure threshold is lowered by tricyclic antidepressants.

Perioperatively, we do not interrupt the administration of tricyclic antidepressants. The increased cerebral catecholamine activity increases anesthetic needs, while the anticholinergic action of these agents can cause postoperative confusion and delirium, especially when centrally acting anticholinergics such as atropine or scopolamine are administered. A low seizure threshold is a relative contraindication to the administration of enflurane or ketamine. The chronic exposure of the heart to tricyclic antidepressants appears to deplete the organ's catecholamine stores, theoretically exacerbating the cardiodepressive action of anesthetic agents. But the most important interaction of tricyclic antidepressants with anesthesia is the excessive response of patients to indirectly acting vasoconstrictors (e.g., ephedrine) and sympathetic stimulation. For this reason, there are drugs that enhance the action of the sympathetic nervous system, such as pancuronium, ketamine, meperidine, and solutions of local anesthetics like epinephrine. In hypotension requiring medical support, the administration of a directly acting vasoconstrictor is preferred.

Monoamine oxidase inhibitors (MAOis)

Their antidepressant action is due to the non-reversible (except for tranylcypromine) inhibition of monoamine oxidase (MAO) in presynaptic nerve fibers, an enzyme responsible for the oxidative deamination of natural amines and catecholamines. This inhibition results in the accumulation and increased activity of catecholamines in the CNS and their therapeutic action. Two subtypes of it have been detected: MAO and MAD. The A isoenzyme selectively deaminates dopamine, serotonin, and norepinephrine, while the B subtype deaminates tyramine and phenylethylamine. MAOI antidepressants are nonselective, while MAO-B inhibitors have no antidepressant action.

Adverse effects include orthostatic hypotension (probably from the accumulation of pseudo-neurotransmitters), agitation, tremor, convulsions, myoclonus, urinary retention, jaundice, and hypertensive crisis, which occurs after intake of tyramine with food.

Perioperatively, the recommendation is to discontinue taking MAOis for at least two weeks before elective surgery, as this time is required for regeneration.

of the enzyme. Latest studies show that maybe discontinuation of antidepressant treatment is not necessary and patients can be anesthetized for emergency surgery, at least electroconvulsive therapy, with security.

As with tricyclic antidepressants, excessive patient response to indirects acting as vasoconstrictors and in their stimulation of the sympathetic should be expected, and drugs that stimulate the sympathetic should be avoided. Phenelzine reduces the activity of plasma pseudocholinesterase and prolongs depolarizing neuromuscular blockade. Rare but serious effects of MAOIs have been reported with opioids, particularly meperidine, with which induction has been associated with hyperthermia, convulsions, and coma (the serotonin syndrome).

Atypical antidepressants

They are the most commonly used first-line antidepressants now. They are selective serotonin reuptake inhibitors (SSRis, selective serotonin reuptake inhibitors), serotonin and norepinephrine reuptake inhibitors (SNRis, serotonin norepinephrine reuptake inhibitors), and there is also a dopamine reuptake inhibitor, bupropion, which is used in the treatment of smoking addiction.

They are the antidepressants with the fewest side effects. They lack anticholinergic action (except paroxetine) and do not affect cardiac conduction.

Perioperatively, they are not yet fully known for their interactions with anesthetic agents. It should be noted that SSRis are potent cytochrome p450 inhibitors, especially isozyme 2D6. Finally, their administration should be continued throughout the perioperative period, as their abrupt interruption has been associated with withdrawal syndrome: dizziness, irritability, headache, nausea, and visual disturbances.

The syndrome is related to the kinetics of shedding of the agents: short half-lives and inactive metabolites are associated with more frequent occurrences of the syndrome. Resuming treatment quickly eliminates symptoms.

Perioperative management

The perioperative monitoring of patients with major depression should be narrow. Aside from medication and important anesthesiologist signs, the severely depressed may be dehydrated due to a lack of fluid intake and food, which can show hypotension and electrolyte disturbances. Also, within the framework of their suicidal behavior, they consent with great ease to undergo major, high-risk operations. The best choice is to postpone an elective operation until the mental health of depressed patients has improved.

Bipolar Disorder- Mania

Incidence: 1.2% in men, 1.8% in women. Prevalence is 1% regardless of gender. Mania is a psychiatric condition that is part of bipolar disorder, along with major depression. There seems to be some genetics involved in the cause of this condition, as 80–90% of patients with bipolar disorder have a relative with the same condition. Pathophysiologically, mania is thought to be due to excessive norepinephrine activity in the brain. The patients with mania show ideas of grandeur, hyperactivity, flight of ideas, risky behavior, and reduced sleep needs.

The treatment of choice is the administration of lithium, which treats acute episodes of rage, prevents their recurrence, and suppresses episodes of depression. In addition to acute episodes of mania, an antipsychotic agent or benzodiazepine may be co-administered. Alternative treatments include valproic sodium and electroconvulsive therapy.

Lithium

Lithium requires special care in the perioperative period. Its mechanism of action is not fully understood. It presents an especially narrow therapeutic range (0.8–1.0 mEq!lit), often resulting in undertreatment or toxicity.

Its adverse effects include T-wave changes on the electrocardiogram, moderate leukocytosis, hypothyroidism with goitre, and nephrogenic diabetes insipidus refractory to vasopressin administration.

Toxic levels of lithium initially cause sedation, slurred speech, muscle weakness, and tremors, while increasing plasma lithium concentrations cause hypotension, dilation of the QRS, AV block, and spasms.

Perioperatively, plasma lithium levels will be closely monitored to avoid potential toxicity. On the other hand, interruption of lithium has been associated with the appearance of suicidal behavior. Sodium deficiency leads to renal lithium retention and toxicity; fluid restriction and hyperdiuresis should be avoided. Lithium interacts with anesthetic agents. Reduces the minimum alveolar concentration of volatile anesthetics as it inhibits the release of norepinephrine, epinephrine, and dopamine in the trunk and prolongs neuromuscular blockade. The use of a neurostimulator is mandatory when neuromuscular blockers are used.

General Problems In Patients With Psychiatric Disease

WIn the general problems of perioperative care management for psychiatric patients, taking a history from a catatonic, delirious, or excitable patient may be particularly difficult. The source of information will be his relatives, caregivers, psychiatrist, or family doctor.

When faced with an overt psychiatric symptomatology, one should bear in mind that many diseases and some pharmaceutical agents can cause symptoms of psychiatric diseases. Hypothyroidism can cause symptoms of major depression. Brain tumors can cause paranoia, personality disorder, and social withdrawal, such as in schizophrenia. Approximately 50% of patients with acquired immunodeficiency syndrome develop a neuropsychiatric syndrome that manifests as dementia, delirium, affective disorder, or personality disorders. A psychiatric evaluation is usually necessary for patients with overt symptoms of mental disorders.

Uncooperative, excitable, or highly anxious patients will need to be sedated before entering the chamber.

Psychiatric patients under medication often present unforeseen needs for hypnotic anesthetic agents. Significantly higher dosage may be required in patients under chronic treatment with antipsychotic drugs or tricyclic antidepressants, whereas depressed or lithium patients have reduced hypnotic needs. The use of the bispectral index monitor can assess the adequacy of hypnosis in these cases.

References

1. Morgan GEjr (E) Anesthesia for patients with neurologic & psychiatric diseases. In: Clinical Anesthesiology. 3rd ed. New York, McGraw-Hill. 2002;583-4.
2. Ebert M, Loosen P, Nurcombe B. Current diagnosis and treatment in psychiatry. New York, McGraw-Hill. 2000;266.
3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 4th ed. American Psychiatric Association Press, 1994
4. Ortega R. Suicide attempt after anesthesia. Anesth Analg 1992;75:463
5. Dalack GW, Healy DJ, Meador-Woodruff JH. Nicotine dependence in schizophrenia: clinical phenomena and laboratory findings. Am J Psychiatry. 1998;155(11):1490-1501.
6. Marder SR. Antipsychotic drugs. In: Tasman A et al eds, Psychiatry. WB Saunders, 1997:1569-1585
7. Pinals DA, Breier A. Schizophrenia. In: Tasman A et al eds, Psychiatry. WB Saunders, 1997:927- 951

8. http://www.emedicine.com/med/topic2614.htm
9. Morgan GEjr (E) Anesthesia for patients with neurologic & psychiatric diseases. In: Clinical Anesthesiology. 3rd ed. New York, McGraw-Hill. 2002;594.
10. Arehart-Treichel J. Colleagues Reflect on Va. Psychiatrist's Tenure as MH Inspector General. Psychiatric News. 2003;38(24):17
11. Gruenberg AM, Goldstein RD. Depressive disorders. In: Tasman A et al eds, Psychiatry. WB Saunders, 1997:990-1019
12. Morgan GEjr (E) Anesthesia for patients with neurologic & psychiatric diseases. In: Clinical Anesthesiology. 3rd ed. New York, McGraw-Hill. 2002;592.
13. Kellar MB, Boland RJ. Antidepressants. In: Tasman A et al eds, Psychiatry. WB Saunders, 1997:1606-1639
14. Gaines GY 3rd, Rees DI. Electroconvulsive therapy and anesthetic considerations. Anesth Analg. 1986;65(12):1345-1356.
15. Stack CG, Rogers P, Linter SP. Monoamine oxidase inhibitors and anaesthesia. A review. Br J Anaesth. 1988;60(2):222-227
16. Mackenzie RA, Southorn PA, Stensrud PE. Anesthesia at remote locations. In : Anesthesia. Miller RD ed, 5th ed, Churchill Livingstone 2000:2263-2265
17. Mayfield BJ, Henry ME. Psychiatric disease and substance abuse. In: Handbook of preoperative assessment and management. Sweitzer BJ ed, Lippincott Williams & Wilkins 2000:289
18. Roizen MF. Anesthetic implications of concurrent diseases. In: Anesthesia. Miller RD ed, 5th ed, Churchill Livingstone 2000:996
19. Hale AS. ABC of mental health. Depression. BMJ 1997;315:43-46.
20. Turner T. ABC of mental health. Schizophrenia. BMJ 1997;315:108-111
21. Mayfield BJ, Henry ME. Psychiatric disease and substance abuse. In: Handbook of preoperative assessment and management. Sweitzer BJ ed, Lippincott Williams & Wilkins 2000:296.