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Anaesthesia for Patients on anti psychotic drugs

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ABSTRACT

Antipsychotic drugs used in the treatment of mental disorder are usually of two types – Dopamine receptor antagonist and serotonin dopamine antagonist. These drugs produce many side effects like extrapyramidal symptoms, sedation, nausea, hypotension, arrhythmia, obesity, diabetes etc. Careful preoperative evaluation and optimization may definitely reduce the incidence of perioperative morbidity.

Key words: antipsychotic drugs, anaesthesia, patients

1. INTRODUCTION

Psychiatric illness is common, affecting up to 10% of the population, with around 1 % diagnosed with a major psychiatric disorder. Many patients are prescribed long-term drug treatment, and the anaesthesiologist must be aware of potential interactions with anaesthetic agents.

Antipsychotic drugs are used in the treatment of psychoses such as schizophrenia and mania (Peck et al., 2010). They treat the acute symptoms of hallucinations and delusions and in the case of schizophrenia are used prophylactically often for long periods (Kudoh et al., 1993). Evidence based guidelines for anaesthetic management of a patient on antipsychotic drugs is lacking. They are mostly based on the individual clinician's experience in the form of case reports, open trials and non systematic reviews. There is no definite guideline for the perioperative management of patients who may be on medications with significant anaesthetic implications. Challenges for the anaesthesiologist may arise from:

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1) the nature of the psychiatric disease, the patients may have impaired biologic response to stress
2) associated co morbid medical conditions due to adverse effects of antiphychotics
3) interactions of psychoactive and anaesthetic drugs, and
4) the problems caused by the condition requiring surgery (e.g. electrolyte derangement and prolonged periods of fasting).

The patients may come for incidental surgery or for electroconvulsive therapy (ECT) under general anaesthesia. Classically, psychiatric illnesses were thought to be due to biochemical imbalances within the central nervous system (CNS). Most drugs act by antagonism at the dopamine (D2) receptors in the central nervous system (Peck et al., 2010). Patients who are on antipsychotic drugs have serious drug–drug interactions, with increased physical risks, including withdrawal, and therefore qualify for American Society of Anesthesiologists (ASA) Classification 3 (Huyse et al, 2006), who are mentally and physical stable (ASA Classification 2).

2. THE ANTIPSYCHOTICS INCLUDE TWO MAJOR CLASSES

First-Generation Antipsychotics are dopamine receptor antagonists.
They are :
1. Phenothiazines:chlorpromazine,trifluprom azine,thioridazone,trifluperazine,fluphenazine
2. Buyrophenones: haloperidol, trifluperidol
3. Thioxanthine: flupenthixol
4. Others : pimozide, loxapine

Second generation antipsychotics are serotonin-dopamine antagonists
Clozapine, resperidone, olanzepine

3. PHARMACODYNAMIC AND PHARMACOKINETIC OF ANTIPSYCHOTIC DRUGS

Antipsychotics block dopamine$_2$, histamine, M_1-adrenergic, and cholinergic receptors. The antipsychotic effect is probably based on their antidopaminergic action. Pharmacokinetics are highly variable, with half-life ranging from 2 hours, for droperidol, to 2 weeks, for the intramuscularly-administrated esterified depot preparations.

4. DIRECT EFFECTS OF ANTI PSYCHOTICS & ANAESTHETIC IMPLICATIONS

The main side effects of the first generation of antipsychotics are extrapyramidal motor disturbances: (1) Parkinson-like symptoms; (2) akathisia; (3) acute dystonias; treatment with anticholinergic may solve the problem (Smith et al., 1996). A seldom, but serious, complication of antipsychotic drugs is sudden death related to a prolongation of the QTc interval and torsades des pointes. The problem is most evident in the phenothiazines, specifically thioridazine (Glassman and Bigger, 2001). Second generation clozapine can result in medical complications, such as weight gain, diabetes, and an increase in lipids, as well as sudden death due to torsades de pointes but the main clinical complications reported are agranulocytosis and hyperthermia and cardiac conduction defects (Meltzer et al., 2002). During anesthesia, hypotension has been reported. In case of discontinuation of clozapine, dystonias, dyskinesias, delirium, and rapid onset of psychosis have been reported, which require emergency psychiatric-specialist intervention (Donnely and Macleod, 1999). These drugs are nowadays replaced by high-potency antipsychotics, in which sudden death is less a problem.

5. INTERACTIONS

Phenothiazines has no hazardous interactions (Amstrong and Cozza, 2001). Hypotension is reported as a hazardous interaction in combinations of haloperidol or droperidol with ketanserin, a serotonergic 5HT$_2$ antagonist with weak selective alpha$_1$-receptor blocking properties. Seizures are reported with desflurane, a volatile anesthesia. Interactions of note are reported for the phenothiazines with antimuscarines. Potentiation of the effects of narcotic analgesics is reported. Chlorpromazine and thioridazine, which can selectively block ∞adrenergic receptors, might lead to interactions with drugs with sympathomimetic action, such as epinephrine, resulting in vasodilatation and hypotension (Mitchell, 2010). Hypotension has been reported when halogenated inhalation anaesthetics are used with several antipsychotic agents. Excess central and peripheral anticholinergic effects have been reported in elderly patients in combinations of chlorpromazine or thioridazine with atropine. The use of tramadol in patients taking psychiatric medication is of particular interest as tramadol may itself cause psychiatric symptoms: altered mood (elation or dysphoria) hallucinations, confusion, sleep disturbance and nightmares (Bovill, 1997). When combined with antipsychotics, selective serotonin re-uptake inhibitors or tricyclic antidepressants, tramadol reduces the seizure threshold.Antipsychotics with ketamine has variable results, may increase confusion,hallucinations but side effects are reduced if ketamine is combined with benzodiazepine (Chui and Chung, 1998).

6. WITHDRAWAL AND PSYCHIATRIC RECURRENCE OR RELAPSE

In a meta analysis including 66 articles and 4,365 patients with schizophrenia, it is reported that patients who continue antipsychotics, in contrast to those who stop, the relapse rate is 16%, versus 53% for those who stopped

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over a mean period of 9.7 months. The relapse rate is much higher in patients who stop suddenly. In those who stop abruptly, within 10 weeks, 25% had symptoms, and, after 30 weeks, 50% had symptoms (Kudoh et al., 2004; Gilbert et al., 1995).

7. ANAESTHESIA FOR PATIENTS TAKING ANTIPSYCHOTIC DRUGS

7.1. Preoperative problems and patient preparation

1. Withdrawal of antipsychotic drugs may result in recurrence of psychotic symptoms and postoperative confusion. So they should be continued postoperatively.
2. Patients on antipsychotic drugs are at increased risk of developing cardiovascular complications due to increased body weight, diabetes mellitus and frequent smoking. Common ECG changes associated with antipsychotic drugs include prolongation of the QT and PR intervals and T wave changes.
3. Therefore, there is a need for careful preoperative evaluation and perioperative cardiac monitoring for electrocardiographic changes in patients using antipsychotic agents. As a result of side effects of antipsychotic drugs these patients suffer from obesity. So patient may need preoperative evaluation of obstructive sleep apnoea.
4. Increased incidence of diabetes mellitus has been reported in these patients due to insulin resistance by antipsychotic drugs. Preoperative control of blood sugar is advised.
5. Paralytic ileus may occur in this group of patients due to anticholenergic and noradrenergic effects of antipsychotic drugs. So patients should be checked preoperatively by abdominal radiograph.
6. Pain insensitivity may occur in patients due to the disease itself, there is increased threshold of C fibres and dysregulation of NMDA receptors or by antipsychotics due to their analgesic effects. These can delay diagnosis leading to increased postoperative complications.
7. Increased incidence of infection is reported due to immune suppression and altered stress response, so antibiotic prophylaxis is indicated.
8. Patients are at risk of water intoxication due to hyper secretion of ADH, effects thought to be a consequence of antipsychotic medication.
9. Adverse effects of anti psychotics should be looked for and treated.
10. Cataract occurs with chlorpromazine and retinal damage occurs especially with thioridazine. So retinoscopy should be done before operation (Kudoh, 2005; Dawson, 1998).

7.2. Intraoperative problems

Whether general or regional analgesia is best suited for schizophrenic patients remains controversial.

1. Bronchospasm and persistent hypotension during spinal anesthesia were reported.
2. Antipsychotic drugs potentiate the hypotensive and sedative effects of general anaesthetic agents, 5 to 20% patients may have profound hypotension after induction; therefore care is required with induction of anaesthesia.
3. Patients may develop hypotension, arrhythmia and seizure under isoflurane and sevoflurane anaesthesia. Antipsychotics increase heart rate so tachycardia is a common problem (Kudoh, 2005).
4. Temperature regulation during anaesthesia may be impaired due to the effects of dopamine blockade on the hypothalamus by anti psychotic drugs. The increased incidence of postoperative paralytic ileus due to sympathetic hyperactivity, and can be reduced by epidural analgesia.
5. Neurolept malignant syndrome (NMS) is an unusual side effects of antipsychotic drugs characterised by acute increase in body temperature, muscle rigidity and autonomic instability (unstable blood pressure, sweating, salivation, loss of sphincter control) similar to Malignant Hyperthermia (MH) which is triggered by inhaled anaesthetics and succinylcholine.NMS is more benign than MH. It is reported that NMS is an unusual idiosyncratic reaction to antipsychotic drugs (Gillbert, 1995). Creatinine kinase and white cell count are usually raised. Mortality is up to 20%. Patients should be treated in ICU; dantrolene is used along with supportive treatment. Despite the clinical similarities with malignant hyperthermia, there is no proven association between the two conditions (Garfield, 2011).

7.3. Postoperative problems

1. There is increased incidence of infection in postoperative period.
2. Increased incidence of postoperative confusion is also reported.
3. Postoperative pain is an important risk factor for postoperative confusio, so adequate pain relief is needed though these patients have less pain sensitivity.
4. Postoperative sudden death has been reported due to conduction problem and cardiac arrhythmias such as QTc prolongation (Tripathy, 2008).

8. CONCLUSION

Increased mortality rates in the peri operative period have been shown in those on long term antipsychotic treatment, attributable to a variety of causes, including cardiac complications, respiratory arrest and complications

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after paralytic ileus. Quality of treatment in patient with mental disorder with comorbid conditions is often suboptimal which may be a cause of increased perioperative complications. Patients on antipsychotic drugs are at increased risk of developing perioperative complications. Proper and judicious management in the intensive care unit help to achieve a successful postoperative outcome.

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