Psychotropic drugs and dentistry

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Summary

Psychotropic drugs have oral adverse effects such as xerostomia and bruxism. They may also interact with sympathomimetic vasoconstrictors or other drugs used in dentistry but some of these interactions have been overstated. The conscious sedation techniques used by dentists to manage anxiety require caution and must be used in accordance with treatment guidelines.

Key words: bruxism, conscious sedation, vasoconstrictors, xerostomia.

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Introduction

Dental patients may be prescribed psychotropic drugs either for a mental illness (see Table 1) or to manage severe anxiety associated with dental procedures. When psychotropic drugs are used to treat a mental illness, they can cause problems such as xerostomia which need preventive dental care.

Taking a medication history is essential for the safe prescribing of dental drugs for concomitant administration. Particular care is needed if the dentist intends to use sedation in a patient who is anxious about dental treatment.

Dental care for the patient taking psychotropic medication

The adverse effects of psychotropic drugs may cause dental problems.

Xerostomia

The most frequently encountered adverse effect of dental importance in patients taking psychotropic drugs is xerostomia. The patient has a perception of dry mouth and the lack of saliva can lead to dental caries and candidosis.[1]

Most antidepressants can cause xerostomia. Drugs with significant anticholinergic activity such as the tricyclic antidepressants are more likely to lead to oral complications, as the effect on salivary function is often prolonged. Newer antidepressants such as venlafaxine, reboxetine and the selective serotonin reuptake inhibitors (SSRIs) can cause dry mouth, but this is likely to be mild and transient, as would often be the case with the psychostimulants. Other drugs with anticholinergic properties such as antipsychotic drugs and antiparkinsonian drugs used to treat antipsychotic-induced movement disorders may also cause dry mouth.[2]

Patients complaining of a dry mouth while taking lithium may be suffering from dehydration as a result of lithium-induced polyuria. They should be referred for appropriate investigation.[2]

If a change to the patient's treatment is not possible, options for the long-term management of xerostomia include dietary modification, saliva substitutes, regular sipping of water and non-pharmacological salivary flow stimulators such as sugarless chewing gum. Sialogogues such as the cholinergic agonist pilocarpine (as diluted eye drops administered topically in the mouth) can be particularly useful for short-term use, but their utility may be limited by systemic adverse effects such as headache, sweating and diarrhoea.[3]

Dental management of a patient with xerostomia requires increased dental recalls for oral hygiene instruction, fluoride application and early intervention.

Bruxism

Bruxism involves forceful excursive movements of the jaw with grinding of the teeth, and leads to excessive dental attrition with various complications. It is occasionally seen with antipsychotics, antidepressants and psychostimulants though it is rarely prolonged. Bruxism may also occur independently of medication in patients suffering symptoms of anxiety associated with mental illness. The complications of persistent bruxism can be reduced by the use of an occlusal splint.

Surgical bleeding

Sodium valproate, an anticonvulsant used in patients with bipolar disorders, is associated with a relatively high incidence of thrombocytopenia and it impairs platelet aggregation. It has been reported to potentiate surgical bleeding and this may occur in dental patients. It may be prudent to obtain relevant laboratory investigations such as platelet count and function before dental surgery. If a significantly abnormal result is obtained the patient should be referred to their medical practitioner for appropriate management. Some antidepressants, in particular the SSRIs, also impair platelet aggregation due to their effects on platelet serotonin uptake. Compared to valproate, less is known about their effect on surgical bleeding, but some caution may be required.[2]

Drug-induced excess salivation

The atypical antipsychotic clozapine has many adverse effects, including cholinergic agonism which leads to hypersalivation –

Table 1

Drugs commonly used in psychiatry [2]

Therapeutic group	Common drugs
Antidepressants	Selective serotonin reuptake inhibitors – including citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine, sertraline
	Tricyclic antidepressants – including amitriptyline, dothiepin, doxepin, imipramine, nortriptyline
	Monoamine oxidase inhibitors – including moclobemide*, phenelzine, tranylcypromine
	Others – including mianserin, mirtazapine, reboxetine, venlafaxine
Antipsychotics	Typical (older type) antipsychotics – including chlorpromazine, flupenthixol, fluphenazine, haloperidol, pericyazine, trifluoperazine, zuclopenthixol
	Atypical (newer type) antipsychotics – including amisulpride, aripiprazole, clozapine, olanzapine, quetiapine, risperidone, ziprasidone
Anxiolytics/sedatives	Benzodiazepines – including alprazolam, bromazepam, clonazepam, diazepam, flunitrazepam, nitrazepam, oxazepam, temazepam, triazolam
	Beta blockers (used for somatic complaints in anxiety disorders) – particularly propranolol
Psychostimulants	Including atomoxetine, dexamphetamine, methylphenidate
Drugs for bipolar disorders	Including carbamazepine, lamotrigine, lithium, sodium valproate
Anticholinergic antiparkinsonian drugs	Benzhexol, benztropine

* Moclobemide is a selective, reversible inhibitor of monoamine oxidase type A and at standard doses is less susceptible to dietary or drug interactions than the classical monoamine oxidase inhibitors.

often nocturnal, but sometimes continual – in a large proportion of patients. During dental treatment, excess saliva may compromise dental materials, create a difficult working environment for the dentist and pose a risk of aspiration.

Anticholinergic drugs are commonly used for patients suffering clozapine-induced hypersalivation. Hyoscine hydrobromide 300 microgram chewed and swallowed before dental work, in addition to standard measures for maintaining a dry field, may be helpful.[4]

Operative use of vasoconstrictors

Sympathomimetic vasoconstrictors such as adrenaline, used in conjunction with local anaesthetics to prolong anaesthetic effect and control local bleeding, are generally safe, but there are some interactions with prescribed psychotropic drugs.[5] These would be most significant following inadvertent intravenous administration of the vasoconstrictor.

Much has been made in the literature of the potential for interaction between local sympathomimetic vasoconstrictors and tricyclic antidepressants, but this is probably most significant with levonordefrine and with noradrenaline (neither in common use in Australia). The antidepressants may potentiate the action of adrenaline and possibly increase the patient's blood pressure. If adrenaline is necessary, consider using about one-third of the normal amount.

Some conjecture exists about the potential for an interaction between monoamine oxidase inhibitors and dental sympathomimetic vasoconstrictors to cause severe hypertensive reactions. Insufficient evidence has been produced to substantiate this interaction and the combination would generally be regarded as safe. It has also been claimed that some antipsychotics can adversely interact with sympathomimetic vasoconstrictors through their alpha-blocking activity. The consequent unopposed beta activity of the sympathomimetic might lead to peripheral vasodilation resulting in prolonged bleeding, hypotension and reflex tachycardia. The evidence in dental practice has not borne this out sufficiently to warrant serious concern where adrenaline is used for its local effect.[5]

Interactions can occur when patients taking non-selective beta blockers are given local anaesthetics containing adrenaline. A lower dose is advised with extra care to avoid intravascular injection.[5]

If there is concern about interactions with sympathomimetic vasoconstrictors, felypressin may be an alternative. Interactions have not been reported with this non-sympathomimetic vasoconstrictor.

Table 2

Examples of interactions between drugs used in dentistry and psychotropic drugs [2]

Dental drugs	Interacting drug(s)	Details of interaction
Non-steroidal anti-inflammatory drugs	Lithium	NSAIDs (including COX-2 selective) all have the capacity to decrease renal lithium excretion, potentially resulting in lithium toxicity
	SSRIs	Increased risk of pathological or surgery-related bleeding when combined with NSAIDs
	Sodium valproate	Combination with aspirin may have a synergistic effect on bleeding time
Opioids and tramadol	Antidepressants	Most antidepressants have the potential to cause serotonin syndrome when combined with tramadol. This effect is not necessarily dose dependent and is unpredictable and the combination should be avoided. Monoamine oxidase inhibitors are contraindicated in combination with tramadol and pethidine due to hypertensive and other autonomic reactions.
	Antipsychotics or tricyclic antidepressants	Tramadol may lower the seizure threshold unpredictably and should not be used.
Antibiotics	Lithium	Metronidazole has the potential to increase lithium concentrations via a decrease in renal excretion. Avoid combination.
	Carbamazepine	Macrolides increase carbamazepine concentration by CYP3A4 inhibition. Avoid combination. Carbamazepine decreases doxycycline half-life by up to 50%. Use alternative antibiotic.
	Sodium valproate	Macrolides increase valproate concentration via CYP3A4 inhibition. Avoid combination.
	Some antipsychotics, tricyclic antidepressants, fluoxetine or venlafaxine	Combination with macrolides can potentiate QT prolongation. Avoid combination.

NSAIDs non-steroidal anti-inflammatory drugs
COX cyclo-oxygenase
SSRIs selective serotonin reuptake inhibitors
CYP cytochrome P450

Post-operative prescribing

Patients who need pain relief after dental treatment should not be denied analgesia because they are taking psychotropic drugs. There are important interactions and some combinations should not be used (Table 2). For example, dextropropoxyphene should not be used in combination with carbamazepine or monoamine oxidase inhibitors, and tramadol or pethidine should generally not be used in combination with antidepressants due to the risk of serotonin syndrome. Alternatives are usually available and paracetamol with codeine is often effective.[6]

Patient participation in preventive dentistry

Patients with a mental illness may be less likely than others to follow oral hygiene advice, but can do so if carefully instructed.[3] Close liaison with other health professionals involved in the patient's general medical and psychiatric management may result in more favourable outcomes.

Pharmacological management of the anxious dental patient

Anyone may suffer anxiety of a severity necessitating pharmacological management in order to facilitate dental treatment. Benzodiazepines and nitrous oxide are the most frequently used drugs. When considering the use of conscious sedation, the 'Guidelines on conscious sedation for dental procedures'[7] should be referred to and all appropriate safety measures taken.

Benzodiazepines

Benzodiazepines alleviate anxiety, and cause sedation, anterograde amnesia and muscle relaxation. Each of these

effects may be of value in treating the anxious patient. These drugs have a wide margin of safety in most patients and differ from one another clinically mainly in their onset and duration of action.

Of the oral benzodiazepines, a reasonable choice is temazepam due to its moderate duration of activity and lower propensity for drug interactions.

Benzodiazepines should be used with caution in patients taking other central nervous system depressant drugs. Drug interactions may also increase or decrease effects of benzodiazepines in patients taking other medication. Benzodiazepines should be avoided in pregnancy wherever possible.[2,8]

Patients who have taken a benzodiazepine should be escorted after treatment and advised not to drive or undertake any other potentially hazardous activities for the rest of the day, even if the benzodiazepine has a short half-life. The duration of action of any benzodiazepine can vary from patient to patient.

Nitrous oxide

Nitrous oxide is a useful and inexpensive inhaled sedative with which many dentists are familiar. It is relatively safe to use provided that appropriate monitoring and procedures for initiation and termination of sedation are followed. Its various advantages include a lack of propensity for drug interactions and rapid 'on-off' activity. If nitrous oxide is being considered for a pregnant patient consult the patient's obstetrician, although it is considered relatively safe with short-term use. Some respiratory illnesses warrant caution, but most other medical conditions pose little problem. It has good anxiolytic and analgesic properties. Adverse effects are uncommon when lower concentrations and shorter durations are used. Nausea and vomiting are occasional problems during recovery. Many patients recover quickly enough to be able to drive home after a short period of observation. Brief psychomotor evaluation tests may be useful in assessing the patient's ability to leave the practice unescorted.[8]

Conclusion

The patients encountered in dental practice are increasingly likely to be taking psychotropic medication due to increased recognition of mental illnesses in the community. It is therefore important for dentists to be familiar with the oral health implications of these drugs. Additionally, dentists frequently use conscious sedation as a useful means of managing the anxious patient and should be well versed in the appropriate use of sedation techniques to ensure safe and effective treatment.

References

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Conflict of interest: none declared

Self-test questions

The following statements are either true or false (answers on page 111)

5. Patients taking antidepressants should not be given local anaesthetics in combination with a vasoconstrictor.
6. Anticholinergic drugs reduce the severity of the xerostomia caused by psychotropic drugs.

Correction

Managing chronic obstructive pulmonary disease (Aust Prescr 2007;30:64-7)

The combination of fluticasone and salmeterol is approved for use in severe chronic obstructive pulmonary disease. It was included on the Pharmaceutical Benefits Schedule on 1 August 2007 for patients with FEV_1 less than 50% of the predicted normal, and a history of repeated exacerbations, who have significant symptoms despite regular $beta_2$-agonist treatment.[1]

Reference

1. Fluticasone with salmeterol (Seretide) for chronic obstructive pulmonary disease. RADAR 2007 Aug 1. National Prescribing Service.www.npsradar.org.au