



Depression and dental health

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Purpose

Major depression is a common disorder that has been demonstrated to affect physical as well as mental health. Recent research is demonstrating links between depression and dental health. This update will provide an introduction to and summary of recent literature.

Depression is a psychiatric disorder in which negative affect, depressed mood, disturbed thoughts, and altered behaviors persist for a minimum of two weeks, and potentially for more protracted periods. Lifetime prevalence rates for major depressive disorder (MDD) are 10% to 25% for women and 5% to 12% for men, whereas point prevalence rates are 5% to 9% for women and 2% to 3% for men (1). However, prevalence in primary care settings has been found to range from 6.6% to 13.5% (2).

MDD is twice as common in adolescent and adult females as in adolescent and adult males with rates being higher for both sexes in the 25 to 44 year-old group, and being lower for both sexes over age 65 (1).

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition defines MDD as the presence of five or more of the following symptoms present for at least a two week period, representing a change from previous functioning, with at least one symptom being depressed mood or loss of interest or pleasure (1):

- ?Depressed mood most of the day, nearly every day
- ?Diminished interest or pleasure in most activities most of the day
- ?Significant weight change or change in appetite
- ?Sleep disturbance
- ?Psychomotor agitation or retardation
- ?Fatigue or loss of energy
- ?Feelings of worthlessness or excessive guilt
- ?Diminished ability to think or concentrate
- ?Recurrent thoughts of death or dying

Treatment for MDD usually includes pharmacological or psychotherapeutic intervention, or both. Numerous medications are prescribed to treat depression, each with varying side effects. Friedlander and Mahler provide a concise summary of classes of antidepressants and their common side effects, with implications for dental management (3).

Dental Consequences of Depression

One of the commonly recognized dental implications of depression is the high comorbidity with chronic facial pain, with studies showing rates of 41% to 78% (4). The literature on depression and chronic pain is voluminous, and cannot be treated adequately here. Suffice it to say that the research describes a reciprocal relationship between chronic pain and depression, which is applicable to orofacial pain patients as well as other types of chronic pain. For a thorough review see Fishbain, et. al. (5). Decreased energy and motivation, as well as negative self-views associated with depression may have a detrimental effect on oral hygiene habits (3) and compliance with treatment recommendations (2). A depressed patient frequently has little interest or energy for even basic self-care activities. Negative cognitive distortions further the depressive spiral in which care of self is neglected.

In addition to the vegetative effects of depression, physiological mechanisms may also affect dental health. Depression is believed to be associated with decreased metabolism of serotonin, which in turn is

associated with a tendency to consume more carbohydrates. This establishes favorable conditions for the growth of aciduric bacteria. The presence of high counts of these bacteria (6) is an indication for the development and progression of dental caries. The presence of pathogenic bacteria colonization may also be caused by impaired immune system functioning related to depression (2).

Antidepressants

Depression is regularly treated with antidepressant medication, which has been shown to have numerous side effects, some of which affect dental health.

Both depression and antidepressant medication have been associated with xerostomia. Research suggests that one of the physiological effects of depression is an alteration of the endocrine and monoamine regulatory systems, contributing to changes in the amount and nature of salivary production (6). Depression is seen to be in part at least a dysfunction of neurotransmitter metabolism, therefore antidepressant medication targets this process. Secretion by the salivary glands is also mediated by neurotransmitters, so these medications frequently have the side effect of reducing salivary production.

Peeters, deVries and Vissink (7) describe the effects of antidepressant medication on blood circulation to the glandular cells, changing the metabolism and filtration process. They state that anticholinergic drugs decrease secretion, and comment that although general clinical belief is that these side effects subside after a few weeks, that this may not be true for decreased saliva production.

These authors describe multiple possible sequelae of drug induced hyposalivation, including "a sensation of oral dryness, thirst, nocturnal oral discomfort, ...and an increased incidence of oral infections" (7) such as candidiasis and periodontal disease. They also report that dental caries can be observed in patients taking antidepressants. They caution about misdiagnosing a burning sensation in the mouth caused by oral infections with burning mouth syndrome.

Despite the known effects of anticholinergic drugs, and the relationship between hyposalivation and possible oral infection, the few studies that have sought to quantify this link have not yielded conclusive results. One study showed a relationship between depression and sub-median periodontal treatment outcome (SMPTO) but not between antidepressant use and SMPTO (2), while another study found no relationship between depression and plaque levels in periodontitis patients (8). Depressive symptoms were not associated with dental caries, periodontal status, or number of teeth in a group of 55-year-old patients in Finland (9).

Recently emerging evidence is suggesting that use of antidepressant medication may also be associated with an increase of bruxism. Case studies report bruxism apparently related to use of venlafaxine, (10) paroxetine, fluoxetine, and sertraline (11). These studies report that the bruxism was effectively treated with either gabapentin or buspirone. They do not, however, discuss the relevance of behavioral interventions as an alternative treatment to antidepressant-induced bruxism. As these are only case study reports, it is clear that additional research is called for to understand etiology and treatment options of this phenomenon.

Summary

Depression presents cognitive and vegetative symptoms that can impact dental health. Problems may arise from depressive symptomatology, physiological sequelae of depression, or from side effects of antidepressant medication. Symptoms of depression such as decreased self-worth, energy, and motivation may interfere with a patient's oral hygiene or compliance with dental

recommendations. Physiological consequences of depression may lead to poor dental health due to xerostomia, cariogenic diet, and impaired immune functioning contributing to oral infection. Antidepressant medications have been shown to cause hyposalivation, which though thought to be short-term, may actually persist over long periods. This may lead to caries or other dental problems. Additionally, recent case reports describe possible incidences of antidepressant-induced bruxism.

Clearly, a patient's psychiatric condition may have a direct impact on dental health and treatment. While it is not incumbent on the treating dentist to diagnose a depressive condition, familiarity with the patient's medical history, current prescriptions, and general indicators of depression could alert the dentist to possible problems, inform the treatment intervention, and possibly facilitate an appropriate referral for evaluation of the depressive symptoms.

Provided below is a list of common antidepressant medications with dental related side effects (3).

Selective Serotonin Reuptake Inhibitors (SSRIs)

Citalopram/Celexa (Forest Pharmaceuticals): xerostomia, dysgeusia, stomatitis, gingivitis, glossitis, bruxism.

Fluoxetine/Prozac (Eli Lilly): xerostomia, sialadenitis, dysgeusia, stomatitis, gingivitis, glossitis, discolored tongue, bruxism, jaw pain, buccal glossal syndrome.

Fluvoxamine/Luvox (Solvay Pharmaceuticals): xerostomia, dysgeusia, stomatitis, gingivitis, glossitis, toothache.

Paroxetine/Paxil (SmithKline Beecham): xerostomia, sialadenitis, dysgeusia, stomatitis, gingivitis, glossitis, tongue edema, discolored tongue, bruxism, caries, dysphagia.

Sertraline/Zoloft (Pfizer): xerostomia, dysgeusia, stomatitis, glossitis, tongue edema, bruxism, dysphagia, gingival hyperplasia.

Atypical Antidepressants

Bupropion/Wellbutrin (GlaxoSmithKline): xerostomia, dysgeusia, stomatitis, glossitis, bruxism, toothache, oral edema, dysphagia.

Maprotiline/Ludiomil (Ciba Pharmaceuticals): xerostomia, sialadenitis, dysgeusia, stomatitis, discolored tongue, dysphagia.

Mirtazepine/Remeron (Organon): xerostomia, sialadenitis, dysgeusia, stomatitis, gingivitis, glossitis, tongue edema, discolored tongue, facial edema.

Nefazodone/Serzone (Bristol-Meyers Squibb): xerostomia, dysgeusia, stomatitis, gingivitis, glossitis, monoliasis, dysphagia, periodontal abscesses, oral ulcers.

Trazadone/Desyrel (Apothecon): xerostomia, dysgeusia, sinusitis.

Venlafaxine/Effexor (Wyeth-Ayerst Pharmaceuticals): xerostomia, dysgeusia, stomatitis, gingivitis, glossitis, tongue edema, discolored tongue, bruxism, monoliasis, dysphagia, halitosis, oral ulcers.

Tricyclic Antidepressants

Amitriptyline/Elavil (AstraZeneca): xerostomia, sialadenitis, dysgeusia, stomatitis, tongue edema, discolored tongue.

Clomipramine/Anafranil (Geneva Pharmaceuticals): xerostomia, sialadenitis, dysgeusia, stomatitis, gingivitis, glossitis, caries, cheilitis, dysphagia, oral ulcers, halitosis, sinusitis.

Desipramine/Norpramin (Aventis Pharmaceuticals): xerostomia, sialadenitis, dysgeusia, tongue edema, discolored tongue, facial edema.

Doxepine/Sinequan (Pfizer/Adapin, Lotus Pharmaceuticals): xerostomia, dysgeusia, stomatitis.

Imipramine/Tofranil (Novartis Pharmaceuticals): xerostomia, sialadenitis, dysgeusia, stomatitis, tongue edema, discolored tongue, facial edema.

Nortriptyline/Pamelor (Novartis Pharmaceuticals): xerostomia, sialadenitis, dysgeusia, stomatitis, tongue edema, discolored tongue, facial edema.

Protriptyline/Vivactil (Merck): xerostomia, sialadenitis, dysgeusia, tongue edema, discolored tongue, facial edema.

Trimipramine/Surmontil (Wyeth-Ayerst Pharmaceuticals): xerostomia, sialadenitis, dysgeusia, stomatitis, tongue edema, discolored tongue, facial edema.

Monoamine Oxidase Inhibitors (MAOIs)

Phenelzine/Nardil (Parke-Davis): xerostomia.

Tranylcypromine/Parnate (SmithKline Beecham): xerostomia.

References:

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC: American Psychiatric Association; 1994.
2. Elter JR, White BA, Gaynes BN, Bader JD. Relationship of clinical depression to periodontal treatment outcome. J Periodontol 2002 Apr; 73 (4):441-9.
3. Friedlander AH, Mahler ME. Major depressive disorder. Psycho-pathology, medical management and dental implications. J Am Dent Assoc 2001 May;132(5):629-38.
4. Korszun A, Ship JA. Diagnosing depression in patients with chronic facial pain. J Am Dent Assoc 1997 Dec;128(12):1680-6.
5. Fishbain DA, Cutler R, Rosomoff HL, Rosomoff RS. Chronic pain-associated depression: antecedent or consequence of chronic pain? A Review. Clin J Pain 1997 Jun;13(2):116-37.
6. Anttila SS, Knuutila ML, Sakki T. Depressive symptoms favor abundant growth of salivary lactobacilli. Psychosom Med 1999 Jul-Aug; 61(4):508-12.
7. Peeters FP, deVries MW, Vissink A. Risks for oral health with the use of antidepressants. Gen Hosp Psychiatry 1998 May;20(3):150-4.
8. Monteiro da Silva AM, Newman HN, Oakley DA, O'Leary R. Psychosocial factors, dental plaque levels and smoking in periodontitis patients. J Clin Periodontol 1998 Jun;25(6):517-23.
9. Anttila SS, Knuutila ML, Sakki TK. Relationship of depressive symptoms to edentulousness, dental health, and dental health behavior. Acta Odontol Scand 2001 Dec;59(6):406-12.
10. Brown ES, Hong SC. Antidepressant-induced bruxism successfully treated with gabapentin. J Am Dent Assoc 1999 Oct;130(10):1467-9.
11. Romanelli F, Adler DA, Bungay KM. Possible paroxetine-induced bruxism. Ann Pharmacother 1996 Nov;30(11):1246-8.

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