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THE ROLE OF IMPLANTS IN SYSTEMIC DISEASE PATIENTS- A REVIEW

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INTRODUCTION:

Elderly patients usually have dental disease and are highly prone to systemic diseases that may require special care during dental treatment. Therefore, it is important to recognize the relationship between certain systemic diseases and dental diseases before creating a treatment plan to achieve a successful treatment result [1]Diabetes and high blood pressure are the most common endocrine diseases and cardiovascular diseases, respectively. Local or systemic disease can affect the long-term outcome of implant treatment. Therefore, it is suggested that some of these diseases are contraindications to DI treatment. [2-4] Xerostomia may affect DI treatment as a local factor. Xerostomia is caused by autoimmune diseases such as Sjogren's syndrome, systemic lupus erythematosus, and diabetes [5]The overall health of dental patients varies, and the prevalence of systemic diseases that can affect dentistry appears to be high.[6] Some systemic diseases can impede circulation and reduce oxygen pressure and nutrients. Therefore, they can be expected to influence the outcome of the osseointegration reaction. Systemic diseases can affect oral tissues, increasing their susceptibility to other diseases or preventing recovery. [7]Common systemic diseases that require special attention from the dentist when treating these patients with implants. These include cardiovascular disease, endocrine disease, kidney disease, respiratory disease, and liver diseases.

Dental Implants in cardiovascular diseases:

Certain cardiovascular diseases (CVS) can reduce blood flow and reduce oxygen tension in cardiovascular disease therefore can be expected to decrease the results of bone integration. [8] In cardiovascular disease, the supply of oxygen produced by the blood circulation is reduced, insufficient oxygen impairs fibroblast activity, synthesis, capillary growth, and macrophage activity, which in turn increases wound infection.[9] If cardiovascular disease is properly treated, patients can safely receive dental implants. [10]Dental implants can be successfully placed in patients with cardiovascular disease (CVD) with proper precautions and proper management.

Precautions thorough preoperative evaluation, including consultation with the patient's cardiologist, is critical to assess cardiovascular risk.[11] Consider antibiotic prophylaxis, especially in patients with valvular disease or a history of infective endocarditis. [12]

Recent myocardial infarction: Elective dental procedures, including implants, should be delayed for at least six months. [13] Poorly controlled hypertension increases the risk of bleeding and cardiovascular events during surgery.

[14]In case of serious cardiac arrhythmias, patients with severe arrhythmias should be stabilized and evaluated by a cardiologist before scheduled dental procedures. [15]Local anesthesia considerations: Adrenaline use: Limit the use of adrenaline in local anesthesia to avoid adverse cardiovascular effects. [16]Patients with cardiovascular disease can successfully receive dental implants with careful planning and treatment. Most important is to perform a thorough preoperative evaluation, prescribe appropriate anticoagulant therapy, implement stress reduction protocols, and ensure continuous monitoring during the procedure.

Dental Implants in Respiratory Diseases:

Dental implants can be an effective solution for patients with respiratory disease, but these conditions require careful evaluation and treatment to ensure successful results. (a). Indications for dental implants in patients with respiratory disease patients with well-controlled asthma can usually undergo dental implants without significantly increased risk. [17] (b). Mild to Moderate Chronic Obstructive Pulmonary Disease (COPD)Patients with mild to moderate COPD may be considered for dental implants if the COPD is stable and well controlled. [18] (c). Severe COPD - contraindications to the use of dental implants in patients with respiratory diseases. This condition can make dental implant procedures difficult due to decreased breathing, increased risk of infection, and poor healing ability. [19] (d). Uncontrolled asthma: may pose a risk due to possible bronchospasm during surgery and impaired recovery after surgery. [20]

Dental Implants in Endocrine disorders:

(a).Patients with diabetes mellitus (DM) have a large number of defects that delay the healing process and increase susceptibility to infection [21]There is also a general effect of "osteopenia". " This may be due to hypoglycemia in diabetic patients [22]Long-term bone loss is more severe in type 1 diabetics than in type 2 diabetics. According to Zarb GA and Alberktsson T [23] Implant success criteria for diabetics are - soft tissue complications were not more likely the incidence of paresthesia was higher in patients with diabetes, and patients with diabetes reported less postoperative pain. These findings suggest that patients with controlled diabetes are not at greater risk of implant failure Medicines used by dentists may need to be adjusted in diabetic patients - related treatments such as large amounts of adrenaline can change the action of insulin and lead to hyperglycemia, small systemic corticosteroids can seriously impair glucose balance. Aspirin, sulfa antibiotics and antidepressants can contribute to hypoglycemia. The dentist should avoid tetracycline and aspirin because these drugs can prevent diabetes. [25]

(b). Hypothyroidism: Decreases bone cell accumulation, resulting in decreased bone resorption and formation [26] Thyroid hormone acts directly on bone and increases production of both insulin-like growth factor I (IGF-1) and IGF-binding protein II [27].] IGF-I increases the number of osteoblasts and improves bone remodeling, but in hypothyroidism, circulating IGF-1 levels are reduced, which can inhibit fracture healing. Patients with medically controlled hypothyroidism have no greater risk of implant failure than controls. Therefore, patients at risk for osteoporosis, cardiovascular disease, controlled diabetes, and hypothyroidism are not at increased risk for implant failure.[28]

Dental Implants in Liver diseases:

Patients with advanced liver disease may experience bleeding due to decreased production of blood clotting factors and thrombocytopenia. Liver dysfunction leads to abnormal metabolism of carbohydrates, lipids, proteins, drugs, bilirubin and hormones[29]Hepatitis A [HAV, RNA], Hepatitis B [HBV, DNA] - spread by drug/blood infusion, sexual contact, high transmission danger through the instrument cut, infections through salivary fissure fluid through mucosal absorption. Special care is required of dentists, as they have a 3-4 times greater risk of infection. [30]Prothrombin time should be tested before treatment to prevent postoperative bleeding and infection [31]Hepatitis C virus (HCV) is known to be significantly associated with Lichan planus Xerostomia, Sjogran's

syndrome and sialadenitis [32]Patients with Hepatitis E virus (HEV) have more caries or missing teeth and poor oral health [33]

Dental Implants in Kidney diseases:

Dental implant therapy in patients with kidney failure is difficult due to complications of chronic kidney disease, such as bone loss. . , blood risks and altered drug metabolism. Chronic kidney disease may affect the early healing of titanium implants and femoral bone defects in a uremic rodent model.[34]Oral manifestations of CKD: in advanced stages, both hard and soft tissues can be affected - oral hygiene deteriorates [35] or oral health in patients with end-stage renal disease. [36] Xerostomia, common symptoms in hemodialysis patients. In chronic kidney disease, saliva has high concentrations of urea, creatine, sodium, potassium, chloride and phosphorus.[37]High salivary pH due to elevated blood urea nitrogen (BUN). Due to increased salivary pH, decreased salivary magnesium and high salivary urea and phosphorus concentrations lead to calcium-phosphorus precipitation, and calcium leads to tartar.[38]Patients may experience gingival bleeding due to platelet dysfunction due to changes in blood coagulation during dialysis [39] Gingival enlargement is the most commonly reported periodontal disease as a side effect of medications such as calcium channel blockers [40]Patients with chronic kidney disease are at increased risk of tooth loss [41] In CKD—the observed hyperphosphatemia and vitamin D deficiency—this can disrupt the balance of these factors and lead to CKD—a mineral and bone disorder.[42] Oral facial disorders include - demineralization of bone, reduced cortical bone thickness, ground - glassy bone appearance, metastatic soft tissues. Dental implant surgery is difficult for patients with end-stage renal disease. Careful planning is very important. Implant surgery is recommended on the day after hemodialysis because toxins have been removed from the circulation, intravenous volumes are large, and heparin metabolism is at an ideal stage.[43]Periodontal treatment prior to implant surgery is necessary to avoid peri-implant failure. [44] Because 1/3 of kidney diseases suffer from infection. Infective endocarditis is one of the most common causes of increased mortality and morbidity in patients with CKD.[45] A more common complication in patients with advanced CKD is high blood pressure [46], in the morning, sedative medications are recommended. Lidocare and mepivacare can be used safely.[47]

Dental Implants in Bleeding disorders: There is no reliable evidence that a bleeding disorder is a contraindication to implant placement. Even hemophiliacs have been successfully treated with dental implants. [48] Current recommendations are implant surgery without changing anticoagulant therapy.[49] Therefore, discontinuing oral anticoagulation during implant placement is not recommended. Patients treated with heparin have a low risk of bleeding. If changing or stopping anticoagulants increases the risk.[50]

Dental Implants in Bone Diseases: A retrospective study states that success of implants and prostheses is predictable in patients with rheumatoid arthritis, but marginal bone resorption and bleeding at the implant is more pronounced in patients with concomitant connective tissue diseases. [51]

Dental Implants in Osteoporosis: Low bone mass leads to deterioration of bone architecture and bone fragility, resulting from an imbalance in bone formation and resorption, which affects bone mineral mass, strength, and the ability to withstand minor trauma. Osteoporosis mostly affects women because they experience early menopause the fastest, then slowdown 8-10 years after their last period. Calcium and vitamin D are important nutrients for bone health, and vitamin and mineral supplements are important. [52]Alzheimer's disease: patients are unable to perform proper oral and dental hygiene techniques.[53]Simultaneous salivation, causes a decrease in lubrication, a decrease in the buffering capacity of antibacterial and antifungal drugs, a decrease in the washing of plaque and bacteria from the surface of the teeth and mucous membranes, patients suffer from dry and cracked lips. , bleeding gums.[54]

DISCUSSION:

According to Attard NJ et al., patients with hypothyroidism had more soft tissue complications, more bone loss around implants, and controlled hypothyroidism, which were not contraindications to implant therapy.[55]Kiani S et al explained absolute contraindications to implant therapy, including bisphosphonate therapy and severe renal impairment.[5]According to Yoon D-L et al., liver disease during the maintenance period may contribute to tooth loss and cause recurrence of dental disease. There is a correlation between the severity of the diseases and the loss of teeth and implants. [30]Dao et al., [56] and Minsk L et al. According to [57], osteoporosis does not increase the risk of implant failure. Later studies also supported this claim. According to Khadivi V and his team [58], patients with controlled cardiovascular disease do not have a greater risk of failure than those without such disease. According to Attard N [59], marginal bone loss was higher in hypothyroid patients treated with implants during the first year of loading. But this bone loss seemed to slow down in later years. Yuan Q et al., [60] stated that 90% of patients with kidney disease suffer from oral symptoms. Salivary glands, periodontium, teeth and oral mucosa can be affected in dialysis patients, which can lead to bleeding gums, early tooth loss, periodontitis and xerostomia. According to Khadivi V and colleagues [58], cardiovascular disease is not necessarily a risk factor for successful osseointegration. Diz P et al [61] concluded from their review that few absolute medical conditions are contraindications to the use of dental implants, but several conditions can increase treatment failure (or complications). Slagter KW et al [62] stated that the use of implants in patients with osteoporosis is not contraindicated, although patients with severe osteoporosis have been successfully restored with an implant-supported prosthesis. Similar to Alsaadi G et al., [63] several retrospective dental implant studies on implant failure reported that hypertension and comorbidities were not associated with significant implant failure. According to Turkyilmaz I, dental implants in diabetic patients with good metabolic control are similar compared to healthy individuals.[64] Because poorly controlled diabetics negatively affect bone integration.[53]

CONCLUSION:

Dentists most systemic diseases are not absolute contraindications for implant surgery, dentists should have a thorough knowledge of these systemic diseases, but they can successfully treat them with implants.

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