



CONSIDERATIONS REGARDING THE MANAGEMENT OF DENTAL PROCEDURES IN PATIENTS WITH ANTICOAGULANT MEDICATION: CASE PRESENTATION

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Abstract: Dentistry is a branch of medicine, with specialized care almost exclusively performed in an outpatient basis, with various dental procedures resulting in bleeding. Due to the increase in the average age of patients, the dentist must pay special attention to the associated pathology, pathology that can lead to uncontrolled bleeding or other complications. The incidence of the number of patients with various anticoagulant medication for associated general diseases has increased. Thus, the approach of these patients must be done in correlation with the management of diseases and associated medication. We found it interesting to report the therapeutic conduct in case of tooth extraction in patients whose medication includes warfarin. The dentist should be aware of possible complications in patients under anticoagulant medication, which requires a judicious case selection, with interdisciplinary collaboration, as well as careful management of surgical procedures to minimize the risks of postoperative bleeding.

INTRODUCTION

Along with the general aging of patients due to the increase in life expectancy (1), an increase in the average age of patients in dental offices can also be observed. These patients have general conditions specific to the elderly population, which require treatment. For the dentist, anticoagulant medication is an increase in risk factors during bleeding interventions, especially due to the outpatient aspect of dental offices.

Situations that require antithrombotic therapy may include cardiovascular disease, a history of myocardial infarction, stroke or transient ischemic attack, diabetes, obesity or metabolic syndrome, various medications, operations such as angioplasty (conditions that may benefit from antiplatelet treatment), atrial fibrillation, valve replacement surgery, congenital heart defects, deep vein thrombosis, pulmonary embolism, pulmonary hypertension (conditions that may benefit from anticoagulant medication).(2)

The most common anticoagulants are: heparin, enoxaparin, fondaparinux and warfarin (Coumadin), dabigatran (Pradaxa), rivaroxaban (Xarelto) and apixaban (Eliquis). The most common anti-platelet medications used are: aspirin, clopidogrel (Plavix), prasugrel (Effient) and cangrelor (Kengreal).(2)

Regardless of the medication class, the effect will be a prolonged bleeding following bleeding dental procedures such as dental extractions, deep dental curettage, gingivectomy, application of dental implants etc.

In order to determine the coagulant function of the body in the presence of different medications, laboratory tests can be performed: Heparin Anti-Xa for heparin, INR (PT test for warfarin), ecarin clotting time (ECT) or aPTT (activated partial thromboplastin time) for Pradaxa, anti-Factor Xa for rivaroxaban and apixaban. For anti-platelet medications, various laboratory tests do not provide useful information to the dentist,

and the only alternative is to either stop the medication for 7-10 days before surgery or replace the medication if possible.(3)

AIM

Anti-coagulants and anti-platelets are medications that create increased risks of postoperative bleeding. Small-scale dento-alveolar surgeries can be performed in the dentist's office on patients with antiplatelet but not in all cases. The dentist should be aware of possible complications in patients under anticoagulants, which requires a judicious choice of cases with interdisciplinary collaboration, as well as careful management of surgical procedures to minimize the risks of postoperative bleeding. We found it interesting to report the therapeutic conduct in case of tooth extraction in patients whose medication includes warfarin.

CASE PRESENTATION

The 55-year-old patient, LG, came to the dentist's office for a routine dental consultation three years ago. Due to special emotional problems (anxiety), the patient did not benefit from consultation and dental treatment in the previous 9 years. As a result, several teeth were considered unrecoverable. The patient's medical history showed a history of type 2 diabetes and atrial fibrillation. The patient's medication consisted of Warfarin 10mg/day, Propranolol 20mg/tid, Amiodarone 800mg/ ay, Metformin 2000 mg/day. The treatment plan required the extraction of the tooth 2.7. and 2.6. (molars one and two upper left).

An interdisciplinary consultation with the patient's cardiologist was requested preoperatively. The INR value was 3.0, but the cardiologist did not agree to discontinue warfarin. Laboratory tests also indicated a hemoglobin A1C value of 6.8. In these conditions, the decision was made to proceed as atraumatically as possible. Also, because this extraction was to

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CLINICAL ASPECTS

lead to extensive edentation, the patient decided on a subsequent implant-prosthetic treatment, which required grafting the dental alveolus.

The patient was premedicated with Amoxicillin 2000 mg one hour before the procedure and was prescribed antibiotics (Amoxiline 1000 mg BID) for 7 days postoperatively. The patient was anesthetized with 3% Carbocaine without adrenaline (to minimize possible hyperglycemia).

Figure no. 1. The sutured aleveolus



The molar was sectioned into three segments, corresponding to the three roots, to minimize the level of trauma to the bone during extraction. The three roots were extracted separately with the help of luxators (Luxator™, Directa, Upplands Vasby, Sweden). Alveolus debridement and cleaning with sterile saline followed. A mesio-distal incision allowed the lifting of gingival flaps, and a non-absorbable dPTFE membrane (Cytoplast, Osteogenics Biomedical, Lubbock, TX, USA) was placed in the oral part. The alveolus was grafted with mineralized cortico-cancellous bone (Maxxeus Dental, Community Tissue Services, Kettering, OH, USA), then the membrane was closed over the alveolus and under the vestibular gingiva, and the wound was sutured with non-absorbable monofilament thread (Cytoplast, Osteogenics Biomedical, Lubbock, TX, USA). The patient was seen one week later for a postoperative check-up. At 4 weeks the sutures were removed, and six weeks later, after assessing the healing status, the membrane was removed. The patient was to be prosthetically restored at a later date.

The 72-year-old patient, ED, initially presented to the dental office for routine dental consultation. The anamnesis showed a history of cardiovascular disease, hypercholesterolemia, sleep apnea. The patient's medication consisted of: Pravastatin 80 mg/day, Losartan 100 mg, Carvedilol 25 mg, Warfarin 5 mg, HCTZ 25 mg, Spironolactone 25 mg.

Figure no. 2. Initial situation, clinical-radiological aspect



At the initial examination the patient complained of mobility of the anterior lower bridge. Radiological examination showed a marked loss of bone tissue at tooth 31 and complete

loss of bone at tooth 42. Considering the possibilities of restorative treatment, teeth 31 and 42 were considered untreatable, to be extracted, and the prosthetic solution was a new bridge with support on teeth 33, 32, 43. Due to the treatment with Warfarin, an interdisciplinary consultation with the patient's cardiologist was requested. The INR value was 2.7, and the cardiologist agreed to the surgery, but refused to stop treatment with warfarin. The extractions were done as atraumatically as possible, with the removal of the granulation tissue to the bone. Due to the medication with Carvedilol the anesthesia was done with carbocaine 3% without adrenaline, to avoid possible interactions. The postoperative wound was sutured with non-absorbable sutures, with "U-shape" sutures and simple sutures. The patient was kept under observation for one hour and received written postoperative instructions.

Figure no. 3. Prosthetic restoration ablation/ sutured aleveolus



DISCUSSIONS

As a result of the improvement of health and the medical system, both locally, nationally and worldwide, the dentist is facing patients whose demographic structure has changed in recent years. This trend is also observed in the United States, with the generation of baby boomers reaching retirement age.(4) This aging is accompanied by associated general diseases, especially cardiovascular disease, diabetes, dyslipidemia, cancer, depression, eye problems, arthritis, joint replacement, diseases affecting mental abilities, other chronic diseases. Medications associated with these general conditions can interfere with simple dental or surgical procedures. In dental practice we have frequently encountered patients on anti-coagulant and anti-platelet medication, patients on anti-depressant medication, and patients on various anti-inflammatory medications. These general medications may interfere with the vasoconstrictor in the dental anesthetics used, may interfere with and affect the healing process after bleeding dental procedures, and may interfere with the process of integration of dental implants.

The clinical cases presented above were chosen precisely because of these interferences. Both patients are taking non-selective beta-blockers as medication. They block both β_1 and β_2 adrenergic receptors. Dental anesthetics most often use epinephrine due to its effect on α receptors. This effect is manifested by vasoconstriction, which will allow the anesthetic agent to be maintained for a longer period of time in the area of interest. Epinephrine also acts on β_2 receptors producing vasodilation, while the agonist effect on β_1 receptors causes an increase in heart rate. Due to the fact that β -type receptors will be blocked by non-selective beta blockers, most of the action of epinephrine will be on alpha receptors, with an increase in blood pressure, and a possible decrease in heart rate (vagal mediated reflex bradycardia). In extreme cases, this phenomenon can lead to a medical emergency in the dental office, manifested by high blood pressure and low heart rate. However, the initial treatment of the heart rhythm will lead to a further increase in blood pressure, which can lead to an intracranial hemorrhage. The doses of epinephrine used in dentistry are very low compared to other branches of medicine - a 2% ampoule of lidocaine with epinephrine 1: 100,000 contains only 17 μg of epinephrine.

CLINICAL ASPECTS

However, cases of patients' death due to these interactions have been documented (5, 6, 7). As a result, in the situation where patients requiring local anesthesia also receive medication with non-selective beta blockers, we decided to use anesthetics without vasoconstrictor. It should be mentioned that, however, that the effect of the anesthetic will fade faster, and as a result the patient will need to be re-injected with the anesthetic to maintain an optimum comfort status.

The presence of diabetes is a factor that can complicate surgical behavior. Diabetic patients have a deficient immune response, a compromised vascular system etc. As a result, diabetic patients who will undergo bleeding procedures will also be protected by antibiotics.

Anti-coagulants and anti-platelets are medications that create increased risks of postoperative bleeding. With the consent of the cardiologist, the anti-platelet medication can be stopped for a period of 7-10 days, allowing the recovery of blood platelets - this recovery is 10% per day. Patients taking warfarin medication may be tested preoperatively for INR values. At values below 3.0-3.5, the intervention can be done on an outpatient basis, with adequate management of the bleeding wound. Higher INR values require either intervention in a hospital setting, or with replacement with a short-acting anticoagulant (Lovenox) to allow intervention. There are a number of new generation anticoagulants that have a low risk of intra- and postoperative bleeding in the case of small-scale surgery (simple and one- or two-tooth extractions, periodontal curettage etc.). Unfortunately, the risk of bleeding in these patients cannot be quantified under normal laboratory conditions. Also, the treatment of uncontrolled bleeding cannot be done in an outpatient setting.

Small-scale dento-alveolar surgeries can be performed in the dentist's office in patients with antiplatelet monotherapy, dual antiplatelet therapy, therapy with new antiplatelet agents - ticagrelor (Briqle). All these situations require cardiologist consultation before surgery, the application of local hemostatic techniques (possible use of oxidized cellulose or absorbent gelatin sponge, tranexamic acid solution), with the resumption of medication therapy when an appropriate hemostasis has been established. In antiplatelet monotherapy with aspirin for primary prevention (in patients without cardiovascular disease), therapy may be discontinued on the recommendation of the attending physician at least 5 days before surgery.

In the case of monotherapy with aspirin or clopidogrel (Plavix®) administered for secondary prevention, in principle the therapy will not be discontinued, and if other risk factors for bleeding are added, only clopidogrel may be discontinued at least 5 days before surgery upon the recommendation of the attending physician. Dual antiplatelet therapy, in principle, does not require discontinuation of antiplatelet medication, but if additional factors are added to the risk of bleeding, only clopidogrel can be discontinued at least 5 days before surgery on the recommendation of the attending physician. In the case of therapy with the new antiplatelet drugs, in principle the therapy will be interrupted at least 3 days before the surgery, depending on the recommendation of the attending physician. Extensive dento-alveolar surgeries will be performed in hospital conditions in patients with triple antiplatelet therapy, in patients who require administration of heparin "bridge" therapy during the discontinuation of oral coumarin anticoagulants (acenocoumarol: Sintrom®, Thrombostopora li), in patients under treatment with the new oral anticoagulants (dabigatran: Pradaxa®, apixaban: Eliquis®, rivaroxaban: Xarelto®), in patients with conditions that contraindicate discontinuation of oral anticoagulants.(8)

Thus, the appropriate surgical conduct was to perform the maneuvers in as atraumatic conditions as possible, with the

use of fine dislocators and sharp elevators, for the sectioning of the dento-alveolar ligaments. This allows the roots in the dental alveoli to rise without very high pressures on the surrounding soft and bone tissues. Debridement of the dental alveoli was also done in an atraumatic manner, but as completely as possible, with the removal of all granulomatous tissues. Finally, it is recommended to use sutures to keep the edges of the wound as close as possible. At the same time, the sutures will prevent the dislocation of the blood clot that will promote the bone healing of the alveolus, and, to a lesser extent, may prevent various food debris from entering the alveolus. The use of gelatin sponges (Gelfoam, Surgispon, Spongostan) impregnated with hemostatic substances can also help to minimize post-extraction bleeding.

CONCLUSIONS

As a result of the increased aging of the baby boomers (the generation of children born immediately after World War II), ambulatory medicine physicians deal with patients with a complex medical history, with various diseases associated with old age, and with patients with a wide variety of medications. In dental practice we meet relatively frequently patients with multiple medications for general conditions. Under these circumstances, and due to the fact that dental procedures are mostly surgical procedures, the dentist must become familiar with various drug interactions, as well as the consequences of bleeding interventions on patients. The use of drug monographs is essential, as well as computer applications such as Epocrates (Epocrates, Athenahealth), which allow the search for interactions between different medications. Also, the knowledge of the latest drug and surgical protocols will allow a safe medical conduct regarding the patient.

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