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A critically severe gingival bleeding following non-surgical periodontal treatment in patients medicated with anti-platelet

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Abstract

Background: Only a few dental procedures have been reported to cause life-threatening bleeding. All of these cases followed surgical intervention.

Material and Methods: In this paper, we report a case of severe bleeding following non-surgical periodontal procedures in a patient treated with a dual anti-platelet regimen post-coronary stent insertion.

Results: Her medical history included ischaemic heart disease, hypertension and diabetes mellitus. Haemostasis was achieved at the conclusion of the non-surgical periodontal treatment. However, several hours later, the patient arrived at the emergency room and was diagnosed with hypovolemic shock.

Conclusion: This case should raise the clinician's awareness of bleeding complications in non-surgical procedures as well as the risk for bleeding when a dual anti-platelet regimen is administered. The importance of patient monitoring and the use of local haemostatic agents is demonstrated in these cases.

Key words: anti-platelet; aspirin; bleeding; clopidogrel; non-surgical; periodontal

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Anti-platelet medications are commonly used for the prevention of thromboembolic diseases such as myocardial infraction, cerebral ischaemia and peripheral arterial insufficiency (Antithrombotic Trialists' Collaboration 2002, Matsagas et al. 2002). Acetylsalicylic acid (ASA) is a frequently used anti-platelet agent. Several other anti-platelet agents have been developed in recent years including ticlopidine (Gent et al. 1989), clopidogrel [CAPRIE Steering Committee (CAPRIE) 1996] and dipyridamole (Gibbs & Lip 1998). The anti-aggregation mechanism of ASA is the inhibition of thromboxane A_2, whereas ticlopidine and clopidogrel mainly antagonize adenosine diphosphate (ADP) receptors on platelets (Savi & Herbert 2005).

Dental literature concerning the control of bleeding in patients treated with anti-platelet drugs and undergoing surgical procedures exists(Mason et al. 1990, Ardekian et al. 2000, Little et al. 2002, Moghadam & Caminiti 2002, Kalpidis & Setayesh 2004). Non-surgical periodontal treatment is considered minimally invasive and is typically associated with minor bleeding. Bleeding control in non-surgical periodontal treatment is infrequently addressed.

In this paper, we present a case of a patient with drug-induced compromised platelet function, who developed severe late bleeding complications and hypovolemic shock following routine non-surgical periodontal treatment.

Conflict of interest and source of funding statement

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*These authors contributed equally to the manuscript.

Case

A 56-year-old female was referred to the Department of Oral Medicine in the Faculty of Dental Medicine in Hadassah University Medical Center for comprehensive dental care in a hospital environment.

Her medical history included ischaemic heart disease (IHD) that was diagnosed in 2000. During subsequent percutaneous transluminal coronary angioplasty (PTCA), she suffered a cardiac arrest and was resuscitated. In 2004, the IHD resulted in acute myocardial infarction. A second PTCA, due to an

abnormal echocardiogram and thallium test, was performed later that year and a drug-eluting stent was inserted. The patient also suffers from diabetes mellitus, hypertension, and a known allergy to amoxycillin. Her medications included metformin (glucophage), simvastatin (simovil), aspirin (micropirin) 100 mg, atenolol (normiten), enalapril (enaladex), clopidogrel (plavix) 75 mg and vitamin B supplement.

Dental treatment was required for severe chronic periodontitis, caries, impacted teeth, and missing teeth.

As part of the initial periodontal therapy, scaling and root planing were performed in the upper and lower left quadrants, using local anaesthesia (infiltration and mandibular block, respectively; 2% lidocaine with adrenalin $1{:}10^5$). Platelet count immediately before periodontal treatment was 209×10^3/ml and the INR was 1. The haemoglobin level 2 weeks before the periodontal treatment was within the normal range (12 g/dl). There were no intra-oral lesions suggesting a bleeding tendency (e.g., mucosal petechiae).

Dental treatment was uneventful. Post-operative haemostasis was confirmed before leaving the dental clinic.

Twelve hours later, the patient was admitted to the emergency room (ER) of the hospital with a complaint of continuous gingival bleeding and vomiting blood. The condition of the patient upon arrival to the ER was poor. The patient felt dizzy, was covered with cold sweat and was nauseated. She physically collapsed, but remained conscious. Oral examination revealed that the bleeding originated from the inter-dental papilla between teeth #25–26 (upper left second pre-molar and first molar). Bleeding was controlled by mechanical and pharmacological means (vicril 4/0 suture, and local pressure with gauze soaked with hexacapron solution). During this treatment, the patient experienced another episode of haematemesis. Immediate complete blood count revealed a low haemoglobin level (10.3 g/dl) and a repeated blood test revealed an even lower haemoglobin level (8.7 g/dl). A diagnosis of hypovolemic shock was made. She was infused with Ringer's lactate solution followed by infusion of 2 U of packed red blood cells. The patient was hospitalized for monitoring and was discharged in good condition after 24 h.

After discharge from hospital, the patient underwent an evaluation for coagulation disorders by her family physician. As there were no pathologic findings, she returned within a few weeks to complete the dental treatment.

During subsequent periodontal treatment, due to increased awareness of her bleeding tendency, special precautions were taken (vicril 4/0 suture or local pressure with a gauze socked with transexamic acid solution, and prolonged post-operative monitoring). In spite of these precautions, 5 months after the first episode, a severe late bleeding episode occurred following root planing of one quadrant. The bleeding started 20 h after the periodontal treatment and was localized to the area treated. Bleeding was stopped using the same local pharmacologic haemostatic means.

Seven periodontal non-surgical treatments were undertaken while the patient was medicated with ASA and clopidrogel. Only two sessions resulted in severe late bleeding.In these two events, bleeding started more than 10 h after post-operative haemostasis. In all other sessions, gingival bleeding was extreme yet controlled (Figs 1 and 2).

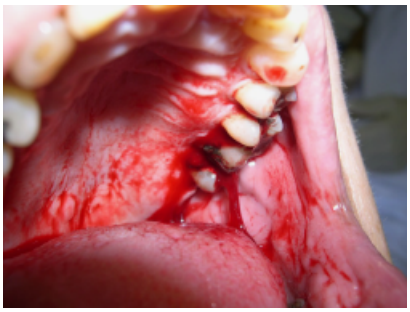

Fig. 1. Notable bleeding presented immediately after scaling and root planing of the upper teeth. The oral tissues are covered with a thick layer of bloody saliva. Origin of bleeding is from the gingiva of the molars.

Fig. 2. A large clot covers the lower incisors immediately after scaling and root planing of the lower teeth. The clot is soft and breaks easily. Gingival bleeding from adjacent teeth is present.

Discussion

The present case demonstrates that an uncontrolled late bleeding episode is a possible severe adverse event following a routine non-surgical periodontal treatment. The bleeding may lead to a hypovolemic shock, and may be critically severe. Although prolonged bleeding in patients consuming aspirin is a well-known phenomenon (McGaul 1978, Thomason et al. 1997), the occurrence of bleeding-induced shock has not been reported previously. The major risk factor for these unexpected events was most likely the anti-platelet medications that the patients received. A recent systematic review of anti-platelet drugs in dentistry summarized the risk for bleeding in dental patients. The combination of aspirin and clopidogrel was not discussed (Brennan et al. 2007). Owing to the lack of information about anti-platelets other than aspirin, the case described in this paper may be an early warning regarding the risk for bleeding following dental treatment in patients administered a dual anti-platelet regimen. There is no reason to avoid dental treatment for patients taking anti-platelet medication, as hypovolemic shock seems to be a rare complication. In addition, during the first hemorrhagic episode, the scaling was performed in the upper and in the lower quadrants, whereas bleeding occurred only in the area of teeth 25–26.

ASA is the only non-steroidal anti-inflammatory drug used in the treatment and prevention of thromboembolic diseases (Bennett 2001). ASA irreversibly inactivates the enzyme cyclooxygenase. This enzyme is responsible for the formation of prostaglandins and thromboxane A_2, which are involved in platelet activation and aggregation mechanisms (Schror 1997). As a result, ASA therapy is associated with increased bleeding time. Clopidogrel is a thienpyridine derivative, a potent inhibitor of platelet inhibition induced by ADP (Daniel et al. 2002). Adding clopidrogrel to ASA is known to increase bleeding complications (Diener et al. 2004).

There are several studies advising that patients stop taking ASA 5–10 days before surgery to prevent post-operative bleeding (Bick 1976, Michelson et al. 1978, Torosian et al. 1978, Komatsu et al. 2005). Others did not report significant increase in blood loss in patients continuing ASA medication (Bartlett 1999, Ardekian et al. 2000, Daniel

et al. 2002, Madan et al. 2005). In our cases, cessation of the anti-platelet agents was not advised before periodontal treatment. The rationale for continuing the anti-platelet treatment is to minimize the risk for thrombotic and embolic complications (Fischer et al. 2004). Given the available topical haemostatic armantarium and the need for multiple treatment sessions in patients with advanced periodontal disease, this regimen is appropriate.

In the reported case, coagulation tests and platelet counts were normal. Platelet function tests were not performed as this was late post-operative bleeding and not attributed to the platelet phase of coagulation. The patient had no signs of bleeding at the end of the periodontal procedure and bleeding appeared a few hours later.

The pathogenesis of these severe late-bleeding episodes may be multi-factorial. The basic effect of anti-platelet therapy was on the initial component of the clotting mechanism. Large blood clots that were visible upon examination may be a hidden niche of conjugated local fibrinolytic process (Sindet-Pedersen 1991). It is well known that thrombosis and fibrinolysis are related. Thus when a large clot exists, there is a stronger trigger for fibrinolysis. As a result, a misleading thrombotic envelope covers an internal anti-thrombotic recess. Secondary local trauma may also trigger the bleeding. Diabetes mellitus may also affect vascular wall vulnerability (McMillan 1997).

The introduction of new anti-platelet medications, such as abciximab, eptifibatide and tirofiban, raise the need for evidence-based data that will assess the risk for bleeding during non-surgical and surgical oral interventions.

In summary, literature regarding post-operative bleeding following anti-platelet drugs mainly relates to surgical procedures. From the case reported here, we suggest that the clinician should also be aware of severe late post-operative bleeding after non-surgical periodontal treatment in patients receiving anti-platelet drugs. The recommendation of the recent systematic review is not to discontinue aspirin before routine dental extractions (Brennan et al. 2007). This recommendation seems to be the appropriate management for non-surgical procedures such as periodontal scaling and root planing. A combined pharmacological anti-platelet treatment may pose a risk greater than suspected previously. Oral health care providers should recognize the importance of local haemostatic measures in patients at risk for severe post-operative bleeding.

Conclusion

Non-surgical periodontal procedure may cause excessive gingival bleeding in patients receiving dual anti-platelet treatment.

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Clinical Relevance

Scientific rationale for the study: The scientific rationale for this case report is to inform health care providers about a possible severe complication of non-surgical periodontal treatment in patients medicated with a dual anti-platelet regimen.

Principal findings: The principal finding presented is a critically severe bleeding episode leading to hypovolemic shock.

Since the American Heart Association and American Dental Association recommend continuing the dual anti-platelet treatment for the first year after coronary stent insertion, the dentist may encounter these patients.

Practical implications:

1. Raise awareness of the risk for bleeding due to a non-surgical periodontal procedure in patients receiving dual anti-platelet treatment.
2. Demonstration of the use of local haemostatics in the clinical practice.