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Comparison of Bleeding Time in Patients on Anti-Platelet Therapy and Controls and Its Implications on Minor Oral Surgical Procedures

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Abstract: Several patients on anti-platelet medications routinely report to the dental clinic for minor oral surgical procedures. It is common practice to stop the anti-platelet medication prior to the procedure and also advise an array of blood investigations for the same. Our study was designed to determine the bleeding time in patients receiving anti-platelet medications and compare it with healthy controls. A prospective case-control study design was undertaken to evaluate bleeding time in patients on aspirin, or in a combination with clopidogrel and a control group requiring dental extraction and was correlated with bleeding from the dental extraction site (n=20 for each group). The bleeding time was determined by the Dukes Method. Our findings suggested no statistically significant difference in the bleeding times between the three groups (p=0.49).Our study revealed that at their therapeutic doses aspirin and clopidogrel did not have a significant impact on bleeding time. Dental extractions may be safely done under local anesthesia in patients taking anti platelet medications without altering the patient's antiplatelet drug regime. Commonly prescribed haematological tests to assess bleeding time hold the same significance that they do in a normal subject.

Keywords: anti-platelet, bleeding time, aspirin, clopidogrel

INTRODUCTION

Anti-platelet drugs are in wide use as a preventive treatment modality in thrombo-embolic diseases and of late in vascular diseases. It is a well established fact, that the use of these drugs could alter the platelet function in a patient and patients benefit from the same.This could in turn result in difficulties for the operating surgeon during oral surgical procedures. The earlier concept of stopping anti-platelet drugs such as aspirin and clopidogrel before such procedures seems to have come under disparagement as authorities believe it unnecessary. Some authors opine that investigations such as the estimation of bleeding time may not be a reliable investigation tool prior to surgery [1]. Additionally, investigations estimating prothrombin time (PT), partial thromboplastin time (PTT) or activated partial thromboplastin time (aPTT) and international normalized ratio (INR) seem unnecessary as they are meant to evaluate the co-agulation cascade and are in no way a measure of a bleeding event in patients on anti-platelet drugs [2]. Patients susceptible to a thromboembolic event are usually on aspirin, clopidogrel or a combination of both. This study aims at evaluating the bleeding time in patients receiving aspirin, combination of aspirin & clopidogrel, as compared to a control group and as a consequence assessing the need for altering the treatment regimen in patients taking antiplatelet medications.

SUBJECTS & METHODS

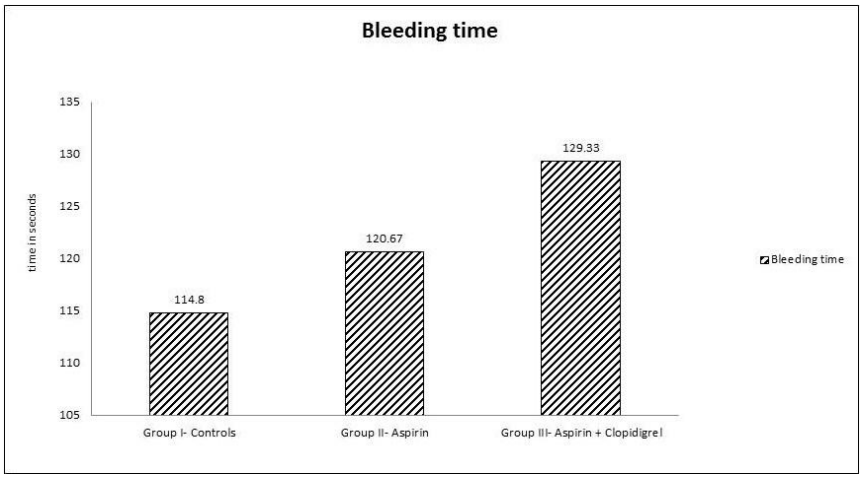
A prospective case-control study design was undertaken to evaluate bleeding time in patients on aspirin or a combination of aspirin & clopidogrel, requiring dental extraction and was correlated with bleeding from the dental extraction site. The bleeding time and clinical excessive bleeding (if any) was also recorded for a control group requiring dental extraction, not on any platelet function altering medication. The bleeding time was determined by the Dukes method. Clinical excessive bleeding was defined as, any patient requiring additional measures for cessation of bleeding from the extraction socket apart from clenching on gauze pack for 45 minutes after a non-complicated dental extraction. The inclusion criteria for the study were: patients requiring dental extraction of a non-mobile single mandibular/ maxillary posterior tooth, patients fit for minor oral surgery under local anesthesia with no known allergy to local anesthetic medication. A random selection of 20 patients each was done for the two study groups and the control group. The parameters recorded were: age, gender, medical and drug history, bleeding time and clinical excessive bleeding following dental extraction. Statistical analysis was done using ANOVA for inter-group comparison.

RESULTS

The gender distribution in groups and the mean age of patients in the two study groups and the control group are summarized in table 1. Clinical excessive bleeding following dental extraction, as per the defined criteria of the study, was not observed in any of the study or control patients. The mean bleeding time BT (+/- SD) in Group I was 1 min 55 seconds (114.8 +/- 50.3 seconds) while in Group II it was 2 min (120.67 +/- 56.6 seconds). The mean bleeding time in Group III was 2 min 9 secs (129.33 +/- 56.9 seconds). (Graph1) This pointed that the observed values for all the patients in the 3 groups were within the normal range. Upon inter-group comparison, no statistical difference was seen between Group I, II and III with the value of p=0.49. Although the inter-group comparison was not statistically significant, the results bear clinical significance.

Table-1: **Demographic data**

Group	Mean Age (in Yrs)	Males	Females
Group I- Controls	59.8 ±5.68	17	3
Group II- Aspirin	45.07 ±10.3	19	1
Group III-Aspirin + Clopidrogel	42.13 ±11.9	15	5



Graph-1: **Mean bleeding time in Groups I, II, III**

DISCUSSION

Patients on anticoagulant therapy could suffer prolonged intra-operative and post-operative bleeding. The authors opine that a significant number of such cases result due to excessive operative trauma. Other factors like poor patient compliance with postoperative instructions, interference/inflammation with the extraction socket or operation site with resultant fibrinolysis, inappropriate use of analgesia with aspirin or other non-steroidal anti-inflammatory drugs which could interfere with platelet function and uncontrolled hypertension can induce a bleeding tendency [3]. Oral anticoagulants are used in a wide array of cardiovascular disorders including atrial fibrillation, ischemic cardiac disease, cardiac valvular disease, prosthetic cardiac valves, post myocardial infarction, deep venous thrombosis, pulmonary embolism and cerebrovascular accidents. Aspirin is a non-steroidal anti-inflammatory drug that alters the cyclooxygenase pathway by inhibiting this enzyme thus affecting the formation of prostaglandins and thromboxane A2 which are involved in platelet activation and aggregation. Aspirin has been the age old drug in the management of patients with cardiovascular diseases [4]. Clopidogrel is an anti-platelet drug that binds irreversibly to the platelet receptor P2Y12 thereby inhibiting platelet response to both exogenous and endogenous adenosine diphosphate. It is the second most commonly used

antiplatelet agent, typically employed both as a substitute for aspirin or as an additional therapy for patients with unstable angina or after coronary stent implantation [5]. O'Brien defined BT as the time between the making of a small cut on the skin and the cessation of bleeding (normally 4–8 minutes) [6]. Although widely used as a preliminary investigation modality, it lacks specificity and hence may be used in patients with known hemostatic disorders [7]. A significant post-operative bleeding should be pronounced so, based on the below mentioned criteria which states that if bleeding continues beyond 12 hours, it causes the patient to call or return to dental practice or accident or emergency department, and also results in the development of a large hematoma or ecchymosis in the soft tissue and requires a blood transfusion [8].

Fijnheer *et al*. in a review article mentioned that there is scarcity of literature regarding cataract, dermatologic, ear, nose, and throat, and dental surgeries involving patients on aspirin medication [9]. Previous studies by other authors have suggested that minor oral surgical procedures can be safely performed in patients taking antiplatelet drugs (aspirin/clopidogrel) without altering its regimen and no attendant risk of increased post-operative bleeding unless the bleeding time is greater than 20 minutes[10-12]. It is worthwhile to note here that in our study there was no significant difference noted in the bleeding and clotting times between the control and study groups. The authors wish to underscore the fact that low dose anti-platelet therapy does not have a significant impact on the bleeding and clotting time and these investigations in such patients hold the same importance as that in an individual who is not on such medication.

CONCLUSION

Dental extractions may be safely done under local anesthesia in patients taking anti platelet medications without altering the patient's antiplatelet drug regime. Commonly prescribed haematological tests to assess bleeding time hold the same significance that they do in a normal subject. As we did not find any significant differences between the bleeding and clotting times of individuals on anti-platelet medications and otherwise, there is need to rethink about the impact these drugs could have on bleeding tendency at their therapeutic doses. In view of the findings of the present study, there is a definite need to avoid exhaustive investigations for evaluating the bleeding tendency and coagulation cascade in patients on anti-platelet therapy.

Compliance with ethical standards

Ethical approval

All procedures performed in the study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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