ACTA MEDICA TRANSILVANICA December26(4):69-71
DOI: 10.2478/amtsb-2021-0078
Online ISSN 2285-7079

CLINICAL IMPLICATION OF THE NEW ANTICOAGULANTS IN DENTISTRY

CRISTINA ADRIANA DAHM TATARU[1], ALINA CRISTIAN[2]

[1,2] *"Lucian Blaga" University of Sibiu*

Keywords: *DOAC, oral surgery, dentistry, risk*

Abstract: *Currently, there is no validated monitoring technique for predicting bleeding risk in direct oral anticoagulant (DOAC) patients, and the dental literature is based largely on case reports and expert views. This study aims at addressing the following questions: "Should they be stopped before the procedure?" and "What is the correct protocol to follow while ingesting DOACs?" There are presently no dental treatment standards for patients using new oral anticoagulants, and bleeding management recommendations are mainly based on professional opinions and clinical observations rather than well conducted studies or laboratory results. Some of the first DOACs were rivaroxaban, apixaban, edoxaban, and dabigatran. DOACs are now being used to treat patients who were previously taking conventional anticoagulants, and as a result, more dentists will be treating DOAC patients. There is currently no validated monitoring test for estimating bleeding risk in DOAC patients, and the dental literature is primarily on case reports and expert opinions. Prior to dental treatment, it is uncertain whether the DOACs should be continued, partially discontinued for 1 day, or fully interrupted for more than 2 days.*

INTRODUCTION

Warfarin has been the medicine of choice for oral anticoagulation in atrial fibrillation for the past four decades. Newer oral anticoagulants including dabigatran etexilate (Pradaxa®), rivaroxaban (Xarelto®), and apixaban (Eliquis®) may now be a viable alternative to warfarin. The European Society of Cardiology has amended its Guidelines for the Management of Atrial Fibrillation to incorporate these medications, and the NICE Clinical Guideline has been updated to include these new oral anticoagulants. This update was introduced in June of 2014.(1)

Dabigatran etexilate (Pradaxa®)

In individuals with non-valvular atrial fibrillation and one or more related risk factors, dabigatran etexilate is indicated as a therapeutic option for stroke and systemic embolism prevention. Dabigatran etexilate is a prodrug that is hydrolysed to produce the physiologically active dabigatran. It is a direct thrombin inhibitor that binds to thrombin and prevents it from interacting with its substrates, inhibiting fibrinogen conversion to fibrin. Before being excreted mostly by the kidneys, dabigatran etexilate has a half-life of 12–17 hours. In patients with atrial fibrillation, the typical suggested dose is 150mg twice daily.(2)

Dabigatran etexilate has a number of known drug–drug interactions but none known drug–food interactions, and it delivers consistent anticoagulation without the need for regular coagulation monitoring. However, there is some criticism about dabigatran's approval for treatment in atrial fibrillation because there is no long-term data on the medicine and more interactions and adverse drug reactions may be discovered when the drug is prescribed more widely. In persons with impaired renal excretion, dabigatran etexilate has also been associated to an increased risk of myocardial infarction and an increased risk of overdose.(3,4)

Apixaban (Eliquis®)

Apixaban is an oral direct inhibitor of activated Factor X, similar to rivaroxaban. It is suggested that people with non-valvular atrial fibrillation and one or more risk factors use it to prevent stroke and systemic embolism. One 5 mg pill taken twice daily is the typical suggested dose for people with atrial fibrillation. Apixaban is processed in the kidneys, liver, and gut and has a half-life of 12 hours when taken orally.

Apixaban has numerous known drug-drug interactions but none known drug-food interactions, and it does not require routine monitoring like the other new oral anticoagulants. However, no long-term evidence, particularly on drug interactions and adverse drug responses, is known. Patients with severe hepatic or renal impairment should use caution.

AIM

There is currently no validated monitoring test for estimating bleeding risk in DOAC patients, and the dental literature is primarily on case reports and expert opinions. Prior to dental treatment, it is uncertain whether the DOACs should be continued, partially discontinued for 1 day, or fully interrupted for more than 2 days.

The following are the questions that this study attempts to answer: "Should they be discontinued before the procedure?" and "What is the proper procedure to follow when consuming DOACs?"

To address this, we must first comprehend the implications of an oral procedure The extraction of multi-rooted

[1]Corresponding author: Alina Cristian, Str Iuliu Maniu, Nr. 2, Sibiu, România, E-mail: alina_cristian@yahoo.com, Phone: +40727 786461
Article received on 08.10.2021 and accepted for publication on 02.11.2021

teeth is associated with a higher risk of bleeding, hence the number of teeth that can be taken in a single session must be limited in this instance. Oral surgery is said to have a low risk of clinically significant bleeding and/or allows for sufficient local hemostasis. The size of the surgical wound influences the likelihood of post-operative bleeding. High-risk procedures include those involving the extraction of four or more dental components and the placement of three or more endosseous implants.

MATERIALS AND METHODS

This systematic review was developed following the guidelines of preferred reporting item for systematic review and meta-analysis (PRISMA).

Search Protocol

Publications were searched in electronic databases such as MEDLINE / PubMed, Google scholar and Cocharne Library to track the points of interest of this SR. The PICO method (population, intervention, alternative investigation, results) was used to make the search more efficient. The articles were in English, German, Turkish and Romanian, without any restrictions or search filters being applied. A PICO analysis was performed to formulate and execute the Search strategy in order to answer the structured questions. The search terms and keywords were as follows:

P. elderly people, dental patients, risks in oral surgery

I. dentistry, oral surgery, anticoagulants, DOACs, blood thinners

C. Warfarin

A. patient management, complications management

RESULTS

Article selection criteria

The authors examined each piece separately before engaging in a collective debate. These were rated according to domains (ancient anticoagulants vs. new anticoagulants). They were also rated for bias risk (as low, medium or high).

To answer to the first question, "Should the therapy be continued or stopped?"

The decision to discontinue or continue DOACs treatment is influenced by a number of factors, including the risk of cardiovascular or venous events as a result of cessation, renal function, and the risk of bleeding associated with surgery.

European Heart Rhythm Association (EHRA) guidelines consider it safe to perform elective surgical intervention at trough level (i.e., 12 or 24 h after last daily consumption) when local hemostasis is possible and/or there is no significant bleeding risk, proposing that it may be more practical to schedule the intervention 18–24 h after the last intake.

In 3–17.8% of procedures, bleeding occurred after the extraction of a maximum of three dental components, with no significant increase in the risk of severe bleeding.

Even when three contiguous teeth are removed, bleeding can occur when they are multi-rooted teeth, according to a recent research.(2) For more than three simultaneous tooth extractions while on anticoagulant treatment, an increased risk of bleeding has been documented. Abayon and Coll (4) observed that a patient receiving rivaroxaban and having nine teeth extracted at the same time experienced clinically minimal bleeding after one day. Breik and Coll (5) observed significant post-operative bleeding in a patient on dabigatran who had 18 teeth extracted at the same time.

In dabigatran treated patients who had up to two dental implants placed in the posterior area and three dental implants placed in the anterior region, Gomez-Moreno et al. (6) found no increased bleeding risk. According to their protocol, the procedure was performed 12 hours after the last dose of dabigatran was given, and the next dose was given 8 hours later. The medicine was taken on a regular basis the next day. Following the procedure, local hemostatic measures were implemented.

In patients treated with rivaroxaban without changing their anticoagulant medication and undergoing up to two dental implant placements, Gomez-Moreno et al. (7) found no increased bleeding risk. Patients in their clinical study (aged 75 and up) exhibited no changes in renal function. However, the research does not specify the time interval between the last administration of the drug and the surgery.

Except when the extension of the flap in the free gingiva occurs, periodontal surgery is thought to have a minimal risk of bleeding. In a recent trial of patients receiving rivaroxaban, the DOAC was discontinued 24 hours before surgery if there were more than or equivalent to four implants. Only three small bleeding episodes handled with compression were seen in this research, which included 12 patients and 57 implants.(7)

There is no particular evidence on the danger of discontinuing DOACs for a short period of time in the literature. Instead, there is information on the long-term use of DOACs among people who have stopped taking them. Physician preference, patient refusal, significant bleeding risk, and other indications were the most prevalent causes. Permanent DOAC cessation was associated with higher all-cause death (8.5 vs. 2.9 events per 100 patients), all-cause hospitalization (64.1 vs. 37.0 events per 100 patients), and severe cardiovascular/neurologic side effects (30.9 vs. 21.8 events per 100 patients).(1,5)

DISCUSSIONS

"What is the proper procedure to follow when consuming DOACs?" there are many aspects that we need to consider.

DOACs should be resumed when a stable fibrin clot has formed if they have been stopped. DOACs have the advantage over warfarin in that they produce anticoagulation quickly and do not require dosage recalibration following reintroduction. Depending on the kind of procedure, a post-operative termination period of 6 to 48 hours has also been established.(6)

Although all patients require proper surgical preparation, those who may require DOACs require even more meticulous planning. In the case of patients using DOACs once daily, some authors recommend executing the intervention in the late afternoon to coincide with a fall in the drug's plasma levels. However, it must be recognized that doing the surgery early in the morning allows the patient to locate the physician in the hours following the procedure. The risk of bleeding rises if surgery is performed too soon after taking the medication. Patients undergoing surgery within 4 hours of their previous DOAC dosage had a substantial increase in bleeding risk, according to Mauprivez and Coll.

Oral surgeons can divide the procedure into multiple sessions if several teeth are extracted at the same time or if the teeth have multiple roots.

Although the administration of epinephrine does not raise concerns about possible systemic effects, it might lead to assessment mistakes; in fact, the decreased bleeding caused by vasoconstriction could be misinterpreted for sufficient hemostasis. As a result, if the surgical parameters are good, it looks more acceptable to employ anesthesia without a vasoconstrictor.

Food eating during the post-operative time may delay the peak plasma concentration of the medication, but this does not appear to be clinically significant. Furthermore, the plasma

concentration is unaffected by performing the intervention as soon as feasible after the previous consumption. Food intake has no effect on edoxaban's anticoagulant action. Reduced fluid intake, on the other hand, may result in medication build-up and, as a result, an increase in anticoagulation.(2)

Oral surgery is considered low-risk for bleeding because to the potential of direct hemostasis, according to the EHRA, and time is considered a helpful element in establishing hemostasis. Collagen and resorbable oxycellulose applied into the extraction socket, acrylic splint for wound protection, application of fibrin glue and secondary sutures, accurate alveolar bone cleaning to remove bleeding granulation tissue, post-operative wound compression with gauze soaked in tranexamic acid Ice pack are all possible precautions to promote adequate hemostasis.

Local wound compression with tranexamic acid gauze is recommended for light bleeding, whereas surgical revision under local anesthetic and precise suturing, as well as the use of tranexamic acid and gelatine sponges, is recommended for moderate bleeding.

To reduce severe bleeding, supportive methods include delaying or stopping the next dosage of dabigatran, maintaining appropriate diuresis, mechanical compression, electrocoagulation, surgical hemostasis, and blood product transfusion.

The risk of bleeding associated with surgery is the first issue to consider when determining whether or not anticoagulant treatment should be discontinued or continued. The study of the literature has emphasized the potential of carrying out the intervention while keeping anticoagulant treatment in the case of surgery with a minimal risk of bleeding and if the kidney function is satisfactory. Planning is crucial when it comes to anticoagulant treatment maintenance.(8)

CONCLUSIONS

If the patient takes DOAC once a day in the morning, it appears reasonable to do surgery first thing in the morning, before taking DOAC, and to delay taking DOAC until at least 4 hours following surgery, when a stable clot has developed. The advantage of this approach is that the operation may be performed around 24 hours after the last anticoagulant dose.

REFERENCES

1. William E. Dager, Michael P. Gulseth, and Edith A. Nutescu, Anticoagulation Therapy. A Clinical Practice GuideEdition: 2, Online ISBN: 9781585284900, 2020.
2. Hiremath J. Novel Insights on Anticoagulants in Clinical Practice: Focus on Acenocoumarol 1st Edition Jaypee Brothers Medical Publishers Pvt Ltd; 1st edition; 2017.
3. Lau JF. Barnes GD. Anticoagulation Therapy ISBN: 978-3-319-73709-6; 2018.
4. Anand D, Prasad K, Sagar P. Anticoagulants and Oral surgical procedures-Comprehensive Guidelines Paperback –Lambert Academic Publishing; 2017.
5. Poller L, Hirsh J. Oral Anticoagulants: Chemical and Biological Properties and Clinical Applications 1st Edition ISBN-13: 978-0340552667; 2020.
6. Goubran H, Ragab G, Hassouna S. Precision Anticoagulation Medicine: A Practical Guide 1st ed. Edition ISBN-13: 978-3030257811; 2020.
7. Morimoto, Y, Yokoe, C, Imai, Y, Shugiara, M, Futatsuki, T. Tooth extraction in patients talfink nonvitamin K antagonist oral anticoagulants, J Dent Sci. 2016;11:59-64.
8. Henrikson H, Alsergren B, Davidson P, Hogestatt T, Ostlund ED, Tranaus P, Vitols S, List T. Pharmacological treatment of oro facial pain-health technology assessment including a systhematic review with network metaanalysis. Journal of oral rehabilitation. 2017;44(10):800-826.