

Knowledge, attitude and perception of antiplatelet therapy among dentists in Central Eastern Turkey

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Abstract

AIM: To survey the dentists in Central Eastern Turkey, testing their knowledge on coronary interventions and assessing perception of antecedent dual antiplatelet therapy.

METHODS: Two hundred and ninety-eight dentists were surveyed face-to-face by completing questionnaires, including 16 structured questions focused on general knowledge of coronary stents, and assessing periprocedural practice with regard to antiplatelet therapy.

RESULTS: All respondents were aware of such devices as coronary stents, but only one-third of the respondents knew the differences between a bare metal and a drug-eluting stent design, and associated vascular

outcomes. Awareness about stent thrombosis was limited to 34%, while consequences of interrupting antiplatelet therapy were known to only 30% of surveyed dentists. Importantly, the attitudes of surveyed respondents differed substantially depending on the location of their practice, where dentists working in the urban environment (population over 10 000) were more aware of antiplatelet recommendations when compared to their colleagues from the rural areas.

CONCLUSION: Knowledge about coronary stents, associated clinical outcomes, and current guidelines with regard to surgical management of antecedent antiplatelet therapy in Central Eastern Turkey is inconsistent, and heavily dependent on the location of dental practice. Rural areas around the globe should be in a focus of continuous medical education to improve the quality of medical care.

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Key words: Antiplatelet therapy; Dental; Coronary artery disease; Survey

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INTRODUCTION

An increasing number of patients suffering from heart disease in general, and coronary artery disease in particular, are routinely treated with aspirin and/or clopidogrel for prevention of major adverse ischemic occlusive events. Discontinuation of antiplatelet agents increases the risk of thrombotic complications, whereas uninterrupted antiplatelet therapy is assumed to increase the bleeding hazard after dental invasive procedures^[1]. Unfortunately, there are no specific, widely accepted recommendations for the management of patients receiving antiplatelet agents during dental procedures, especially following minor surgery. Since the available evidence is very limited, with no data forthcoming from randomized trials, there is no consensus on a “real life” rate of bleeding after routine tooth extraction. Such bleeding risks are in the range of high (6%)^[2] to as low as negligible or non-existent rates independent of whether dual or monotherapy with antiplatelet agents have been used^[3]. Currently, due to the increasing number of coronary interventions and stent implantations justifying broad acceptance of longer duration of dual antiplatelet therapy, the American Heart Association, the American College of Cardiology, the Society for Cardiovascular Angiography and Interventions, the American College of Surgeons, the American Dental Association, and the American College of Physicians have presented a consensus document which underscores the risks of premature termination of dual antiplatelet therapy^[4]. However, there is still a healthy debate with regard to optimal perioperative antiplatelet management at the time of dental procedures in high-risk patients after ischemic events^[5]. While some dentists prefer to discontinue antiplatelet therapy claiming a perceived risk of perioperative bleeding, others will still proceed with surgical procedures in patients taking antiplatelet drugs for an appropriate indication. Considering these inconsistencies, physicians face practical situations in which the periprocedural bleeding risk has to be balanced against the individual risk of thrombotic complications. The purpose of the index study was to investigate the knowledge of dentists in Central Eastern Turkey regarding coronary interventions and to describe the routine management of patients receiving dual antiplatelet therapy who undergo a minor dental surgical invasion.

MATERIALS AND METHODS

We conducted a survey in Central Eastern Turkey from June 2011 to January 2012, by completing a face-to-face questionnaires in 5 dental clinics (1 teaching facility, and 4 public hospitals) among 298 currently practicing dentists. The sample size was not based on any statistical considerations, since any dentist practicing in the area, and willing to participate, qualified for the study. The geographical area where the survey has been conducted is outlined in Figure 1. Two interviewers (final year nursing students) were trained to conduct such surveys by 2 attending cardiologists, and received detailed instructions



Figure 1 The surveyed geographical area in Central Eastern Turkey.

Table 1 Survey questions

Do you know what is a coronary stent?
Do you know the difference between a bare metal and a drug-eluting stent?
Do you know what is the optimal duration of clopidogrel therapy after bare metal stents?
Do you know what is the optimal duration of clopidogrel therapy after drug eluting stents?
Do you know what is clopidogrel?
Do you know what is prasugrel?
Do you know what is ticagrelor?
Do you suspend treatment with aspirin before a dental invasion in your patients?
Do you suspend treatment with clopidogrel before a dental invasion in your patients?
Do you consult with a cardiologist before interrupting antiplatelet medication(s)?
Do you ever wait until antiplatelet treatment is completed before performing procedure?
Do you know the consequences of interrupting treatment with clopidogrel?
Do you know the rate of stent thrombosis after clopidogrel withdrawal?
Do you know the mortality rate associated with stent thrombosis?
Do you know how important is dual antiplatelet treatment in preventing thrombosis after stent implantation?
Are you aware of the guidance recommendations produced by the United States clinical societies?

with regard to appropriate questioning, and filling the responses. The questionnaire included 16 structured questions which were developed and focused to adequately assess periprocedural practice regarding the management of patients receiving antecedent antiplatelet therapy at the time of dental invasions.

Survey questions

The survey aimed to assess the awareness, knowledge, and perception about modern coronary devices and optimal antiplatelet strategies at the time of dental invasions. For these purposes, sixteen questions were included in the survey (Table 1).

Dental procedures

A dental intervention was defined as repairs or tooth extractions, performed under local anesthesia, with no need for sutures.

Statistical analysis

Descriptive statistics were used to report percentages of positive or negative responses. We used Continuity

Table 2 Survey summary

Question	Rural area (n = 74)	Urban area (n = 224)	P value
Do you know what is a coronary stent?	100% (74) ¹	100% (224)	NS
Do you know the difference between a bare metal and a drug-eluting stent?	32.4% (24)	79% (177)	< 0.001
What is the optimal duration of clopidogrel therapy after bare metal stent implantation?	4.1% (3)	26.3% (59)	< 0.001
Do you know the optimal duration of clopidogrel therapy after drug eluting stent implantation?	4.1% (3)	26.3% (59)	< 0.001
Do you know what is clopidogrel?	94.6% (70)	89.3% (200)	0.250 (NS)
Do you know what is prasugrel?	0	0	NS
Do you know what is ticagrelor?	0	0	NS
Do you suspend treatment with aspirin before a procedure in your patient?	93.2% (69)	88.8% (199)	0.374 (NS)
Do you suspend treatment with clopidogrel before a procedure in your patients?	93.2% (69)	88.8% (199)	0.374 (NS)
Do you consult with a cardiologist before interrupting antiplatelet medication?	100% (74)	100% (224)	NS
Do you prefer to wait until antiplatelet treatment is discontinued before performing procedure?	32.4% (24)	79% (177)	< 0.001
Are you aware of the consequences of interrupting treatment with clopidogrel?	23% (17)	37.9% (85)	0.027
Do you know how frequently thrombosis occurs after suspending treatment with clopidogrel in a patient with a coronary stent?	32.4% (24)	29% (65)	0.682 (NS)
Do you know the mortality rate associated with stent thrombosis?	9.5% (7)	10.3% (23)	0.597 (NS)
Do you know the importance of dual antiplatelet therapy for stent thrombosis prevention?	32.4% (24)	79% (177)	< 0.001
Are you aware of the guidance document produced by the American societies?	32.4% (24)	79% (177)	< 0.001

¹Number of respondents. "Yes" answers are counted as positive for each survey question. NS: Not significant.

Correction or Fisher's Exact test to determine the association between the dentists working in different areas and knowledge of antiplatelet strategies. A *P* value of less than 0.05 was considered significant. The statistical analysis was carried out using version 15.0 of SPSS (Chicago, IL, United States).

RESULTS

The response rate to the survey was 100%, suggesting that all 298 dentists provided a complete set of answers. Of these respondents, 74 dentists (25%) indicated working in rural areas (inhabited with less than 10 000 population), while the majority of 224 (75%) had practices in the urban areas. The summary of combined responses is outlined in Table 2.

Coronary stents and thrombosis

When asked about coronary stents, all respondents were aware and had general knowledge that such devices exist. In contrast, only about one-third of the respondents reported knowing the differences between bare metal and drug-eluting stents, and the associated adverse outcomes. When asked about their level of awareness about stent thrombosis, only 30% of the surveyed dentists had knowledge about the consequences of interrupting treatment with clopidogrel and, similarly, only 30% were aware of the high mortality rates associated with stent thrombosis.

Antiplatelet therapy, optimal duration, bleeding and thrombotic risks

When asked how familiar they were with the guidance recommendations document produced by numerous United States clinical societies, 67% of respondents were aware about such a consensus document. However, when asked about their willingness to perform dental procedures in patients with implanted coronary stents, and in

those undergoing antecedent antiplatelet treatment, all of the respondents were cautious, and expressed willingness to consult a cardiologist before interrupting aspirin or/and clopidogrel. Most dentists are well aware of such drugs as clopidogrel (90.6%); however, none of the respondents recognized the names of the new generation antiplatelet agents (such as prasugrel or ticagrelor). When asked about the optimal duration of clopidogrel therapy after drug-eluting stent implantation, only a quarter of responders knew the correct answer (1 year).

When asked about their attitude toward suspension of treatment with aspirin and clopidogrel before a dental procedure, nine out of ten respondents practice discontinuation of antiplatelet agents. On the other hand, when asked about their perceptions towards waiting until antiplatelet treatment is completed before performing a dental procedure, two-thirds of the survey respondents prefer such a delayed strategy for elective invasive dentistry. Importantly, the attitudes of surveyed respondents differed substantially depending on the location of their practice, where dentists working in an urban environment were more aware of antiplatelet strategies when compared to their colleagues working in the rural areas. This discrepancy was especially evident with regard to the knowledge of the differences between a bare metal and a drug-eluting stent design ($P < 0.001$), optimal duration of chronic antiplatelet therapy after bare and drug-eluting stent implantation ($P < 0.001$), the importance of dual antiplatelet treatment in preventing stent thrombosis ($P < 0.001$); which were all significantly higher for urban area dentists. Moreover, dentists in urban areas had a better knowledge of the guidance consensus documents, and intended to wait until antiplatelet treatment was permanently discontinued before performing procedures ($P < 0.001$).

DISCUSSION

This observational study was intended to provide an

insight into the current trends for decision-making with regard to periprocedural antiplatelet treatment among the practicing dentists in Eastern Central Turkey. The practical importance of such a goal is hard to overestimate since optimal potency and duration of maintenance antiplatelet therapy is still not clear, and is barely supported by the evidence-based medicine. Therefore, poor adherence of the dentists to the guidelines is common, and not surprising. Our survey suggests that dentists experience reasonable concerns with regard to escalated periprocedural bleeding risks that frequently lead to premature cessation of antiplatelet therapy in their daily practice, which is against the current guidelines^[4]. Importantly, all dentists claimed that they consulted with a cardiologist prior to interrupting antiplatelet therapy. This fact is quite reassuring that optimal medical strategies are being applied. The management of long-term antiplatelet therapy after stent implantation is a critical issue for well-being, and even for survival of patients with implanted stents. Although the reasons for the development of stent thrombosis are multifactorial, premature cessation of antiplatelet therapy has been established as the most important risk factor after coronary stenting, especially with regard to late^[6], and very late^[7], stent thrombosis. Based upon data from the Percutaneous Coronary Intervention - Clopidogrel in Unstable Angina to Prevent Recurrent Events trial^[8], it has been recommended that, if not contraindicated, clopidogrel should not be discontinued for at least one year at the conventional 75 mg/d dose^[4]. The most common reasons for premature cessation of dual antiplatelet therapy seem to be non-compliance, bleeding, allergic reactions, and noncardiac surgery. In fact, planned surgery represents the number one verifiable reason for premature discontinuation of antiplatelet therapy, and occurs in about 30% of such patients. Our data suggest that dentists in Turkey are mostly unaware of the differences in the recommended duration for optimal duration of antiplatelet therapy dependent on stent design. It will also be important to establish how these data may affect strategies after general non-cardiac surgery. Some reliable evidence has suggested that when compared to controls, the risk of prolonged immediate bleeding was higher in dental patients on dual antiplatelet therapy [relative risk (RR) = 177.3, 95% CI: 43.5-722, $P < 0.001$] but not in patients on aspirin alone (RR = 6.3, 95% CI: 0.6-68.4, $P = 0.2$) or clopidogrel alone (RR = 7.4, 95% CI: 0.7-79.5, $P = 0.18$). Importantly, all immediate bleeding complications in all treatment groups were successfully managed with local hemostatic measures, with no patient developing any late hemorrhage^[1]. On the other hand, the rate of vascular events was doubled in the first 4 wk after invasive dental treatment and gradually returned to the baseline rate within 6 mo. The positive association remained after exclusion of patients with diabetes, hypertension, or coronary artery disease^[5].

Therefore, the optimal treatment strategy for tooth extractions, the most frequent minor dental surgical

procedure, in the expanding cohort of patients receiving long-term antiplatelet therapy is a challenging issue, since the documented thrombotic risk of antiplatelet withdrawal needs to be balanced against the putative hemorrhagic risk of uninterrupted antiplatelet treatment. Uninterrupted dual antiplatelet therapy is currently recommended in patients with drug-eluting stents who undergo dental procedures, although there are only a few prospective and retrospective studies specifically assessing the reasoning behind this approach^[4]. Altering a patient's medication, even for the short term, is always risky, and should be balanced.

Our paper is the first to show the remarkable differences in the general medical awareness about antiplatelet therapy among dentists dependent on the practice area. Indeed, those practicing in the urban areas were well aware of recent scientific developments, while rural practice dentists were much less knowledgeable probably due to lack of access to educational resources.

There are a few limitations worth mentioning. Some questions in our survey were purely subjective, with a limited value of "Yes" or "No" answers. A multiple choice type question would have been much more informative, and should be employed in future studies. Also, age, sex, seniority, education background and duty may also be important determinants of the knowledge, attitude and perception of antiplatelet therapy. It is also important to record whether or not participating dentists were practicing in hospitals with cardiac catheterization laboratories. The frequency of cardiac patients experiencing serious bleeding or ischemic events is also important. Another issue is whether it is unclear if answering questions to a survey was reasonable in terms of quality control assurance. Finally, the index data cannot be generalized, since practice patterns in other regions of the world may be different. Future studies should at least report, or attempt to match these variables for better representation.

We conclude that the knowledge about coronary stents, associated clinical outcomes, and current guidelines with regard to invasive management of antecedent antiplatelet therapy in Central Eastern Turkey is inconsistent, and heavily depends on the location of dental practice. Rural areas around the globe should be in a focus of continuous medical education to improve the quality of medical care.

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COMMENTS

Background

Many patients with coronary disease routinely undergo minor dental surgery while receiving dual antiplatelet therapy. This dangerous combination is like a double-edged sword, since stopping antiplatelet therapy may cause adverse ischemic events, but keeping the patients on such strategy may increase the

bleeding risks.

Research frontiers

Two hundred and ninety-eight dentists were surveyed face-to-face by completing questionnaires, including 16 structured questions focused on general knowledge of coronary stents, and assessing periprocedural practice with regard to antiplatelet therapy.

Innovations and breakthroughs

All respondents were aware of such devices as coronary stents, but only one-third of the respondents knew the differences between a bare metal and a drug-eluting stent design, and associated vascular outcomes. Awareness about stent thrombosis was limited to 34%, while consequences of interrupting antiplatelet therapy were known to only 30% of surveyed dentists. Importantly, the attitudes of surveyed respondents differed substantially depending on the location of their practice, where dentists working in the urban environment (population over 10 000) were more aware of antiplatelet recommendations when compared to their colleagues from the rural areas.

Applications

Knowledge about coronary stents, associated clinical outcomes, and current guidelines with regard to surgical management of antecedent antiplatelet therapy in Central Eastern Turkey is inconsistent, and heavily dependent on the location of dental practice. Rural areas around the globe should be in a focus of continuous medical education to improve the quality of medical care.

Peer review

The authors performed a survey among 298 dentists to explore their basic knowledge about stents and anti-platelet agents. Specifically, they were interested to know what would they do if planning simple dental extraction. As could be anticipated basic knowledge was different between urban and rural regions. Overall, all dentists claimed that they would consult a cardiologist prior to proceeding to dental extraction. This is pretty reassuring and seems to be important.

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