Sante dentaire chez les patients recevant une anticoagulation

Oral health status and knowledge of oral health in cardiac patients receiving oral anticoagulation

Fathia Mghaieth Zghal, Khouloud Laffet, Wejdene Dridi, Selim Boudiche, Khalil Ouaghlani, Manel Ben Halima, Bassem Rekik, Sana Ouali, Larbi Noureddine, Kamel Ben Salem*, Mohamed Sami Mourali

Department of cardiological investigations and resuscitation. La Rabta University Hospital. Faculty of Medicine. University of Tunis El Manar. Tunis. Tunisia.
**Epidemiology and Statistics Department, Sousse*

Résumé

Introduction : Un lien étroit est établi entre la santé bucco-dentaire et la santé cardiaque par le biais de voies d'inflammation et infection chroniques. Les patients recevant des anticoagulants ont fréquemment des saignements buccaux mineurs qui peuvent limiter les gestes d'hygiène dentaire. Chez ces patients, il conviendrait de préciser le statut de santé bucco-dentaire et son association au statut éducatif et socio-économique afin d'orienter les politiques de santé bucco-dentaire.

Objectif: Evaluer l'état de santé bucco-dentaire chez 322 patients cardiaques et d'établir une association avec leur statut socio-économique et leur niveau éducatif et leurs connaissance en matière d'hygiène bucco-dentaire.

Méthodes: Un entretien structuré a été réalisé avec les patients par un médecin dentiste qui a procédé par la suite à un examen stomatologique pour évaluer leur état buccal. Les connaissances en matière d'hygiène bucco-dentaire et le statut oral ont été qualifiés en se basant sur un score. Le score de connaissances a évalué 11 paramètres et le score d'état oral, les éléments suivants (articulations temporo-mandibulaires, ganglions cervicaux, hygiène buccale, muqueuse buccale, gencive, formules dentaires, salive, prothèses dentaires). L'état oral a été considéré bon quand le score était égal à zéro.

Résultats: Le pourcentage de patients présentant une bonne hygiène buccale était de 9,3%. Une corrélation statistiquement significative a été trouvée entre le score de l'état oral et le score de connaissance ($p < 0,05$). Une association statistiquement significative a également été observée entre le score de connaissances et les paramètres démographiques: niveau de scolarité et revenu mensuel personnel ($p < 0,05$).

Conclusions: Sur la base de ces résultats, l'état d'hygiène buccale du patient était médiocre chez la majorité des patients et il était associé à des facteurs de connaissances et des facteurs démographiques.

Mots-clés

Santé bucco-dentaire, hygiène, cardiopathie, anticoagulation

Summary

Background: a strong link is established between oral and cardiac health through infectious and chronic inflammatory pathways. Patients receiving anticoagulants have frequently minor mouth bleedings which can limit oral care. In these patients, oral health status and its association to educative and socioeconomic status need to be elucidated to orientate oral health politics.

Aim: The purpose of this study was to assess oral health status in 322 cardiac patients and to establish an association with their socioeconomic status and their awareness and knowledge about oral hygiene.

Methods: A structured interview was carried out with patients and a stomatological examination was performed by a dentist to evaluate their oral condition. Both were qualified on a score basis. The knowledge score evaluated 11 parameters and the oral status score assessed the following elements (Temporo-mandibular joints, cervical nodes, oral hygiene, oral mucosa, gingiva, dental formula, saliva, dental prostheses). Oral status was considered good when equal to zero.

Results: The percentage of patients who had a good oral hygiene condition was 9.3%. A statistically significant correlation was found between the oral condition score and the knowledge score ($p < 0.05$). A statistically significant association was also found between the knowledge score and demographic parameters: educational level, personal monthly income ($p < 0.05$)

Conclusions: Based on these results, patient's oral hygiene status was poor in the majority of patients and it was associated to knowledge and demographic factors.

Keywords

Oral health, hygiene, cardiopathy, anticoagulation

Correspondance
Fathia Mghaieth Zghal
Department of cardiological investigations and resuscitation. La Rabta University Hospital. Rue Jbel Lakhdar, La Rabta Jebbari 1007. Tunis.
Mail: fathia.zghal@fmt-utm.tn

INTRODUCTION

Periodontal and cardiovascular diseases have the same risk factors such as smoking, age and diabetes [1]. Periodontal disease or periodontitis is a chronic inflammatory disease affecting the tooth supporting tissues and bone. It is caused by a host response against bacterial infection involving the oral cavity and dental plaque leading to tooth loss[2]. Periodontal and cardiovascular disease share common etiopathogenic mechanisms; inflammatory markers, including C-reactive protein, lipoprotein-associated phospholipase A2, fibrinogen, and interleukin-6, have been associated with increased clinical cardiovascular incidents as well as periodontal inflammation [1].

Daily dental procedures are responsible for bacteremia of oral commensal germs. Patients with periodontal disease are at risk of bacteremia even after brushing their teeth. [1]

In fact, in case of insufficient oral hygiene, up to 1011 microorganisms per mg of plaque can be detected. [3]

Bacteremia rarely affects healthy people, but it can lead to fatal infectious endocarditis in susceptible individuals such as valvulopathy or prosthetic valves. [1]

According to the recommendations of the Preventive Cardiovascular Nurses Association on valvular heart disease, focused on infective endocarditis (IE), «maintaining optimal oral health and hygiene can reduce the incidence of bacteremia associated with daily activities and is more important than prophylactic antibiotics for dental care''.

The international consensus statements recognize the relevance of the association between periodontal disease and atherosclerotic cardiovascular disease (ASCVD) and recommend preventative oral health approaches to be adopted in cardiac care settings [4, 6] and that all patients with cardiovascular disease (CVD) engage in preventative oral health practices and attend regular dental care to reduce cardiovascular risks [6, 7]

Despite these recommendations, research reports about the oral health status and practices of adults with CVD are limited. In a cross-sectional study involving 150 adult Iranian patients with heart disease, the authors found that oral health practices were poor and patients knowledge was moderate [8]. Most studies in this area have focused on children with cardiac diseases and their parents/caregivers. These studies showed poor oral health status among the children and inadequate oral health knowledge and practices among their parents [9] [10]. Overall, research and understanding about the oral health status, behaviors and knowledge of adults with CVD is limited, particularly in Tunisia where no studies about oral hygiene in patients with CVD were conducted.

Therefore, the aim of this study was to evaluate the oral hygiene status of cardiac patients and to establish an association with their socioeconomic status, their knowledge of oral hygiene and the behavior they adopt in order to establish adapted awareness strategies.

METHODS

We conducted a cross-sectional study in the Department of cardiological investigations and resuscitation. La Rabta (University of Tunis) between February 2017 and March 2018. The study was conducted in the anticoagulation specialized consultation. This is a 5/7 days consultation which insures INR control for patients receiving oral antivitamin K (AVK) treatment and educative purposes. It receives a mean of 30 patients daily.

Population Inclusion criteria: the study was based on a voluntary participation of the patients who were informed about the aim and modalities of the study. It included all adult (age ≥ 18 years) ambulatory consenting patients of the cardiology service who came to their scheduled visit for oral anticoagulation control.

Exclusion criteria: we did not include patients treated by anticoagulants for non-cardiac reasons, patients who had bleeding manifestations, hemodynamic instability, significant signs of heart failure (NYHA>2) and patients with declined mental status. These conditions were considered compromising for the interview or the oral examination.

Anamnestic data collection:

Patients were asked a series of questions to specify the following elements: demographic and socio-economic data, nature of heart disease, knowledge and attitudes toward maintaining good oral health. Various response formats were used in the questionnaire such as 'yes,' 'no,' 'I do not know' (Appendix 1).

Knowledge score was established based on patient responses.

Oral physical examination and oral health score:

Patients subsequently had a dental clinical examination determining the following elements (Temporo-mandibular joints, cervical nodes, oral hygiene, oral mucosa, gingiva, dental formula, saliva, dental prostheses) (Appendix 2)

Periodontal status was assessed considering the following variables: bleeding, tooth mobility and gum state.

The oral condition was evaluated considering the following variables: hygiene, periodontal status and tooth decay.

An oral health score (OHS) was established by summing ''Hygiene'', ''periodontal status'' and ''tooth decay index''.

Score= 0 was interpreted as good oral health status

Score < 0 was interpreted as poor oral health status

Study population subgroups definitions:

2 pairs of sub study groups were defined based on either heart or oral status

Group A: patients with good oral condition; oral health score = zero

Group B: patients with poor oral condition oral health score > 0.

Group 1: patients with prosthetic heart valve(s)

Group 2: patients without prosthetic heart valve

Ethical considerations:

Oral consent of patients was obtained in advance of the questionnaire and the examination.

Statistical analysis:

Normally distributed continuous data were expressed as mean ± standard deviation (SD) and were compared using the one-way ANOVA. The enumeration data were expressed as percentage and were compared using the Chi-square test.

Correlations between continuous variables (knowledge and oral health scores) was established using the non-parametric Spearman test.

Statistical analysis was performed using SPSS 25.0. The p value less than 0.05 was considered statistically significant.

RESULTS

Descriptive study:

The study included 322 patients with an average age of 60 ± 11 years and a female predominance (sex ratio (H / F) = 0.8). Oral condition was poor 9 to 10 patients (figure 1)

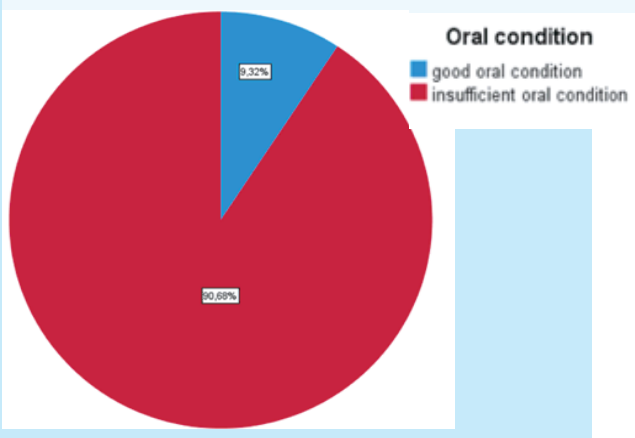

Figure 1: Distribution of patients according to the oral condition

***Demographic data*:**

Table I summarizes demographic characteristics of the study population

Table 1 : Demographic characteristics of the study participants, according to oral condition group

Parameter	General population N=322	Group A (N=30)	Group B (N=292)	p-value
				0.26
Female (%à	53.1	43,3	54,1	0.03
Distance between hospital and residence ≥5 Km (%)	38.5	63,3%	36,0%	0.268
Education level : illiterate (%)	42.9	33,3%	43,8%	0.359
personal monthly income* (%)				
<200TND	34.2	20,0%	35,6%	
200TND-500TND	32.9	40,0%	32,2%	
>500TND	17.1	23,3%	16,4%	
No response	15.8	16,7%	15,8%	0.359
national health insurance fund	76.7	90,0%	75,3%	0.359

TND: Tunisian dinar (national currency)* guatanteed minimum professional wedge=403 TND

Knowledge about oral health and care rules

There is a low percentage (6.9%) of patient who had regular yearly visits to the dentist for a check-up.

Only 32.3% of patients brushed their teeth two times or 3 per day, while 67.7 % never brushed or did not brush every day and only 25.8% knew the right method to brush their teeth.

Table II summarizes interview answers of the study participants according to oral condition group.

Table 2 : Interview answers of the study participants, according to oral condition group

Parameter		General population N=322	Group A (N=30)	Group B (N=292)
Cause of dental decay, %				
Don't know		79.2%	86,7	78,4
Regular brushing, %				
Yes		46.9	70,0	44,5
No		53.1	30,0	55,5
Cleaning teeth/dentures , %				
2-3 times per day		54	76,7	51,7%
1 time per day or less		46	23,3	48,3
How often do you change your toothbrsh				
Every 2 / 3 months		2.2	3,3%	2,1%
Self-medication No		55.6	73,3%	53,8%
Duration of brushing				
2 or 3min		36.6	40,0%	36,3%
Other response			60,0%	63,7%
first sign of a decay				
Pain and hypersensitivity		98.1	100,0%	97,9%
Regular Dental check-ups	Yes	6.8	3,3%	7,2%
Cleaning of the interdental space	Yes	12.1	20,0%	11,3%
Professional cleaning	Never	57.1	43,3	58,6%
Brushing method	Arbitrarily		70,0%	74,7%

***Dental examination findings*:**
Table III Summarizes oral examination findings.

Table 3 : Oral examination findings in the general population

Presence of Tooth disease	59,9%
Presence of a Periodental disease	88,8%
Insufficient oral hygiene	82,9%
Presence of Adenopathy	0,3%
Abnormality of temporomandibular joints (TMJ)	10,9%

Analytical study

comparison of oral condition according to cardiac status
Table IV shows no differences in oral health condition were found between Group 1 and group 2.

Table 4 : Comparison of oral condition according to cardiac status

Oral condition	**Group 1 (N=209)**	**Group 2 (N=113)**	**P value**
Good, N (%)	21 (10,0%)	9 (8%)	0.539
Insufficient, N (%)	188 (90%)	104 (92%)	

Correlation between oral health status and demographic and knowledge variables
A statistically significant relationship between the number of annual dental visits and the knowledge score of patients was found. (p< 0·05)
A statistically significant relationship between the educational level and the knowledge score of patients was found. (p< 0·05) A statistically significant relationship between the patient's personal monthly income and the knowledge score of patients was found. (p< 0·05) Among demographic data a correlation was retrieved between the oral condition score and the distance between the Hospital and the residence of the patient (p< 0·05) A significant correlation between the oral status and the knowledge score of patients was found. (p=0.03).

Multivariate analysis
Independent factors associated to poor oral conditions were ''Health insurance type'' (OR=4.318, p=0.005), ''dental hygiene'' (OR=134.114, p=0) and ''Regular brushing'' (OR=6.078 p=0.003).

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DISCUSSION

The present study reveals that most of the patients, 90.68% specifically, had an insufficient oral hygiene condition and it proved an association between the oral status of the patients and the knowledge score which is also related to demographic conditions.
This figure is in fact noticeably high compared to both developed and developing countries as only 9% of the population in the US for example had poor condition of mouth and teeth [11] and only 33.8% in Nigeria according to a study evaluating Oral hygiene status and practices among rural dwellers[12].
In multivariate analysis three factors were identified as independent factors associated to poor oral health status; Health insurance type (OR=4.318, p=0.005), dental hygiene (OR=134.114, p=0) and regular brushing (OR=6.078 p=0.003).
Only 6.9 % of the participating patients had a regular dental check-up. Compared to developed countries, this is far from the recommended procedure for dental services usage. A cross-national survey of 27 European countries in 2016 reported that 63.24% of the study participants had a dental check-up in the past 12 months [13]. High or moderate check-up rates have been reported by 58% in the USA, according to a survey from Delta Dental Plans Association in 2018, 46% in Japan(survey in 39 private dental clinics in 2003) [14], 67.9% in England, 65.8% in Wales and 67.3% in Scotland (Adult self-reported attendance for dental check-ups over a 16-year period in the UK. Between 1991-2008).[15] A cross-sectional questionnaire administered to patients with cardiovascular disease from Sydney Australia in 2016–2017 reported that over a third (41.2%) of participants had not seen a dentist in the preceding 12 months. [16]
In less developed countries the rate of regular dental check-ups is still low. In Iran for example, only 9.9 % of a cross-sectional study participants had dental check-ups every 6 months in 2015. The same study found that the rate of dental check-ups is strongly associated with factors such as household income, age, academic level, self-rated poor oral healthcare and dental insurance.
A statistically significant relationship is found between the number of visits to the dentist and the patients' knowledge score. This may suggest that having a good knowledge of oral health and hygiene can increase the number of visits to the dentist and help keeping a proper oral condition.
Statistically speaking, a significant relationship is also detected between the oral condition of the patient and the distance between his residence and the hospital where visits are held. This may also be explained by the fact that patients under anticoagulation therapy are rarely treated by private sector dentists because of the poorly managed hemorrhagic risk.

Study limitations

This study involves patients from a single CHU, usually coming from the same geographical area. Therefore, it is not really representative of the national status.

The stomatological clinical examination was performed using a tongue depressor, a method considered sufficient to obtain reliable and satisfactory data for the purposes of this study conducted in the cardiac-resuscitation unit.

CONCLUSION

An oral hygiene prevention and awareness strategy is needed within cardiology departments to improve the oral health of patients and protect them from further risks.

An educational program for patients under anticoagulation therapy based upon routine dental care should be designed. Dental practitioners and hospital dental practitioners should be involved.

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