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EVALUATION OF PATIENTS' KNOWLEDGE AND AWARENESS OF ORAL CAVITY HYGIENE'S INFLUENCE ON CARDIOVASCULAR DISEASES

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Abstract:

Introduction: Cardiovascular diseases including heart attack and stroke are the main cause of death in Poland. Out of the numerous bacteria that inhabit oral cavity, some are responsible for periodontitis. There is a confirmed correlation between chronic inflammation and cardiovascular disease.

Aim of the study: The aim of study is evaluation of patients' knowledge and awareness of the correlation between the oral health and the occurrence and development of cardiovascular diseases, especially atherosclerosis.

Materials and Methods: The study included 150 patients from three locations in Lodz: Electrocadiology Clinic of Medical University of Lodz, a multi-profile clinic in Lodz and Oral Surgery Department of Medical University of Lodz.

Each patient filled a questionnaire which contained demographic data (age, sex, place of residence, education), questions related to the oral cavity (a subjective estimate of the patient's own oral hygiene, frequency of teeth brushing, last visit to the GDP), and five questions about the influence of the oral hygiene on the cardiovascular system with three options: Yes, No, and I don't know.

Results: Most patients realize that decayed teeth can cause inflammation in the body and influence the development of cardiovascular diseases. On the other hand, only less than half of the patients have knowledge about correlation between oral health and development of atherosclerosis.

Conclusion: Increasing patients' knowledge about the oral health and hygiene, the condition of the dentition and gums, and the overall health, including heart diseases, is a very important aspect of dentists', general practitioners' and cardiologists' work. Patients are aware of the influence of the oral hygiene on their health but their knowledge needs to be deepened and systematized.

Key words: oral hygiene, cardiovascular diseases, atherosclerosis

Introduction

In the last decade many epidemiological studies revealed the correlation between chronic stomatitis and development of cardiovascular diseases [1]. According to GUS (Central Statistical Office) information, since 1990 the main reasons of death in Poland are cardiovascular diseases, including heart attack and stroke.

The cause of above-mentioned diseases is atherosclerosis. Every infection, regardless of the etiology, can accelerate the problem. [2]. One of the potential areas of infection is the oral cavity,

because there are 10^{11} of bacteria in just 1mg of the dental plaque [3].

There are many bacterial strains in the oral cavity. Microorganisms, for example *Porphyromonas gingivalis*, *Tenerella forsythia*, *Aggregatibacter actinomycetemcomitans* responsible for progression of periodontitis are the main reason of systemic inflammation. These bacteria can damage gingival endothelial cells, and as a result stimulate inflammation of the connective tissue [2]. Bacterial exotoxins (LPS) initiate release of inflammatory mediators, which maintain inflammation.

Another pathophysiological mechanism of atherosclerosis is direct bacterial initiation to develop microclots in blood vessels of distant organs, which in turn cause the forming of atherosclerosis. Finding periodontal bacteria atherosclerosis plaque confirms above-mentioned argument.

In addition reports exist about the influence of antibodies against bacterial antigens, increasing the risk of heart attack, acute coronary syndrome and stroke [5].

Aim of the study

The aim of the study is to estimate patients' knowledge and awareness of the correlation between the oral health and the occurrence and development of cardiovascular diseases, especially atherosclerosis.

Methods

The study included 150 patients from three locations in Lodz: 50 patients from Electrocardiology Clinic of Medical University of Lodz, 50 from a multi-profile clinic in Lodz, and 50 patients from Oral Surgery Clinic of Medical University of Lodz. Each patient filled an original questionnaire consisting of three parts.

First part contained demographic data: age, sex, place of residence, education. Examined group consisted of 72 women (48%) and 78 men, in the age from 15 to 93. Average age was 52 years old [tab. 1]. 110 patients (73,3%) were residents of large cities, over 50 thousand residents, 10 patients (6,7%) lived in a city under 50 thousand residents, 30 respondents (20%) lived in a village [tab. 2]. 13 patients (8,6%) represented basic education. 61 people (40,7%) finished secondary school, 21 patients (14%) had vocational education whereas 55 people (36,7%) had tertiary education [tab. 3].

Second part included subjective patients' estimate of the effectiveness of own oral hygiene, frequency of brushing and last visit to the dentist.

The last part of questionnaire comprised 4 direct questions about correlation between oral cavity hygiene, cardiovascular diseases and systemic health. Patients had three options: Yes, No, and I don't know.

Results

22 people (15%) rated their hygiene as very good, 63 (42%) as good, 51 (34%) in average, and 14 (9%) considered their dental hygiene as bad [tab. 4].

The brushing frequency in the study group is as follows: 16 subjects (11%) brush their teeth three times a day or more frequently. The majority of the subjects - 81 people (54%) twice daily, 39 (26%) once daily, and less than once daily 9% [tab. 5].

The next question was about the time elapsed since the last dental visit. Most of the patients (61%) reported that their last visit to the dentist was in the last 6 months, 24 (16%) were in a dental surgery in the last year, and 35 respondents (23%) had their last visit in last 2 years or more.

It is worth noting that a very large proportion of patients - 93% - are aware that a necrotic tooth can cause inflammation in the body.

Patients' awareness of bacteremia, which occurs during dental and hygienic procedures, such as tooth brushing and its influence on the development of distant infections, has also been investigated in this study. 54% were aware of the described pathophysiological mechanism, 28% answered, "I do not know" and 18% thought the above mentioned treatments had no effect on the onset of infection.

The study also examined the level of knowledge about the impact of teeth condition on heart disease. 81% of people are aware that such correlation exists. 13% responded, "I do not know", 9 people denied it.

In the question about the impact of dental health on the rise and development of atherosclerosis, the responses were more varied - less than half of the respondents – 48,7% are aware of the correlation, 13,3% replied "no" and 51,3% are unaware.

Discussion

Analysis of collected data revealed that patients' knowledge about the impact of oral cavity health on all human body is insufficient. Only 54% of respondents are aware of bacteraemia as a result of a dental procedure, which resembles the data obtained by Haładyj et al [5], where 64,38% of respondents are aware of the above mentioned correlation. Whereas the results of patients' awareness about the influence of oral cavity health to heart disease (81% patients are aware), and atherosclerosis (48,7% of the respondents have the knowledge about the correlation) is only slightly more optimistic than the data obtained by Haładyj et al, where only 45,62% people are conscious.

Considering the fact that almost 35% of the patients brush their teeth once a day or more rarely, and that 23% of patients visited dentist 2 years ago, or earlier, it can be seen that there is a lack of awareness about prevention and dental treatment, which overlaps the Kalińska et al findings. [8].

Due to the fact that cardiovascular diseases are the main cause of death in middle and older age group [6], it is important to prevent it. Unfortunately, in both diagnostics and treatment, the

general condition of the host organism and the presence of accompanying diseases are overlooked despite the principle of holistic treatment of the patient. The impact of oral hygiene is particularly significant, as studies show that as many as 80% of the population in Poland and in other European and North American countries require improvement, while 70% suffer from some form of periodontal disease [7].

Conclusion

In view of the above data, the state of knowledge of the influence of oral hygiene on cardiovascular disease is not sufficient. Only increased patient education can improve this condition and raise public awareness of the importance of taking better care of oral hygiene and its impact on the whole human organism.

References

- [1] Kłosińska A., Nowacka M., Kopec G. i wsp: Choroby przyzębia a ryzyko chorób sercowo-naczyniowych- przegląd badań epidemiologicznych, *Kardiologia Polska* 2010; 68;8:973-976
- [2] Stokowska W :Związek chorób przyzębia z chorobami serca i naczyń., *Czas. Stomatol.* 2009, 62,7,554-561
- [3] Jańczuk Z.: Stomatologia zachowawcza z endodoncją. Zarys kliniczny, wyd. PZWL,2014, 499
- [4] Włosowicz M., Wożakowska-Kapłon B.: Choroby przyzębia a ostre zespoły wieńcowe, czy istnieje związek? ,*Studia Medyczne* 2008;12:57-60
- [5] Haładyj A., Borakowska-Siennicka M.: Ocena wiedzy i świadomości pacjentów i lekarzy na temat wpływu chorób przyzębia na choroby sercowo-naczyniowe, *Nowa Stomatologia* 4/2014 151-158
- [6] Włosowicz M., Wożakowska-Kapłon B., Górski R.: Stan jamy ustnej u pacjentów z zawałem serca oraz ze stabilną dławicą piersiową, *Nowa Stomatologia* 2/2012 75-79
- [7] Rychlik U., Marszałek A., Rychlik M.: Choroby układu sercowo-naczyniowego a zapalenie przyzębia problem pacjentów czy lekarzy? ,*Journal of laboratory Diagnostics* 2013 ,49 ,3 , 259-262
- [8].Kalińska A, Górski B., Górski R., Zaremba M.: Brak świadomości pacjentów na temat korelacji pomiędzy cukrzycą, chorobami układu sercowo-naczyniowego a zapaleniem przyzębia – problem pacjentów czy lekarzy? *Nowa Stom* 2010; 3: 130-140

[Tab. 1] Age group

Age group	Number of patients	Percentage of overall number of subjects
< 45 y.o.	42	28.00%

45 – 59 years	41	27.30%
60 – 74 years	51	34.00%
75 – 89 years	15	10.00%
> 90 years	1	0.70%

[Tab. 2] Respondents' place of residence

Repodndents' place of residence	Number of patients	Percentage of overall number of subjects
city > 50 tys. residents	110	73.30%
city < 50 tys. residents	10	6.70%
village	30	20.00%

[Tab. 3] Respondents' education

Respondednts' education	Number of patients	Percentage of overall number of subjects
Eighth grade	13	8.60%
secondary	61	40.70%
vocational	21	14.00%
tertiary education	55	36.70%

[Tab. 4] Subjective estimate of own hygiene

Subjective estimate of own hygiene	Numer of patients with indicated answer	Percentage of overall number of subjects
very good	22	15.00%
good	63	42.00%
average	51	34.00%
bad	14	9.00%

[Tab. 5] Frequency of brushing

Frequency of brushing	Numer of patients with indicated answer	Percentage of overall number of subjects
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3 times a day	16	11.00%
2 times a day	81	54.00%
Once a day	39	26.00%
Less frequent than once a day	14	9.00%