14. Bazargan-Hejazi, S., et al., Prevalence of depression symptoms among adolescents aged 12-17 years in California and the roles of overweight as a risk factor. Ethnicity & Disease, 2010. 20: p. S1-107-115.
15. Herman, S., et al., Depressive symptoms and mental health treatment in an Ethboracially diverse college student sample. Journal of American College Health, 2011. **59**(8): p. 715-720.
16. Nikapota, A.D., Child psychiatry in developing countries. The British Journal of Psychiatry, 1991. 158: p. 743-751.
17. Yuen, C.W., Child maltreatment in Malaysia: Prevalence, correlates, and probable health and behavioural consequences. 2007, Queensland University of Technology: Brisbane.
18. Park, Y.-J., et al., Depression status of academic high school students in Seoul: Mediating role of entrapment. Journal of Korean Academy of Nursing, 2011. 41(5): p. 663-672.

THE PERIODONTAL STATUS IN HYPERTENSIVE PATIENTS AT THE HOSPITAL OF CANTHO UNIVERSITY OF MEDICINE AND PHARMACY, 2015-2016

Tran Thi Ngoc Nho, Truong Nhut Khue[*]

Can Tho University of Medicine and Pharmacy, Vietnam;

*Corresponding author: tnkhue@ctump.edu.vn

ABSTRACT

*Background: Chronic periodontitis may predispose patients to the risk of hypertension. However, current scientific evidence addressing the relation between periodontitis and hypertension is limited to few studies producing inconsistent results **Objectives**: This study was performed to assess the periodontal status in hypertensive patients by describing meam levels of periodontal indices and some related factors in patients with hypertension at the hospital of Can Tho University of Medicine and Pharmacy. **Subjects and methods**: A cross – sectional descriptive study was conducted on 130 hypertensive patients aged 35 – 64. In order to evaluate the periodontal status of subjects, four indices, such as: Gingival Index (GI), Simplified Oral Hygiene Index (OHI-S), Probing Pocket Depth (PPD), Clinical Attachment Loss (CAL) were assessed and subjects having at least one site with clinical attachment loss (CAL) ≥3mm were diagnosed as having periodontitis. Hypertension was defined and classified based on WHO/ISH. For assessment of the prevalence in the populations of individual risk factors, hypertension was defined as having systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg, or measurements below thresholds but self-reported anti-hypertensive medication. Hypercholesterolemia was defined as measurement of total cholesterol ≥ 6.2 mmol/l (240 mg/dl) at the time of survey, or measurement below threshold but self-reported cholesterol-lowering medication. **Results**: The mean of GI: 1,25 ± 0,42, OHI-S: 2,41 ± 0,42, PPD: 1,37 ± 0,46 mm and CAL: 2,73 ± 1,11mm. With an increase of CAL, there was a progressive increase in blood pressure (r = 0,295, p<0,01). **Conclusion**: Our results suggest that periodontitis may contribute to poor blood pressure control among older adults.*

Keywords: periodontitis, hypertension, blood pressure.

I. INTRODUCTION

In recent years, periodontal diseases have attracted more attention thanks to their possible link with systemic diseases through inflammatory responses and endothelial dysfunction. One of the systemic diseases usually mentioned when discussing about the link is hypertension. Hypertension is a chronic disease, one of the leading causes of death and a common condition in developed countries as well as developing ones [1].

Although many researches have revealed the link between chronic inflammation and hypertension [4], [5], there have been just a few studies conducted on the association between hypertension and oral infections, especially periodontal diseases. In Vietnam, the relationship between periodontal diseases and high blood pressure has not been studied. Therefore, treatment and prevention of periodontal diseases for hypertension patients have not caught enough attention from both the physician and the patient. Hence, this research – "The periodontal status in hypertensive patients in the hospital of Can Tho University of Medicine and Pharmacy, 2015 – 2016" – was conducted with the aims:

(1) to assess the periodontal status in hypertensive patients hospitalized of Can Tho University of Medicine and Pharmacy hospital in 2015.

(2) to find out various factors influencing periodontal diseases in patients with high blood pressure in the hospital of Can Tho University of Medicine and Pharmacy in 2015.

II. SUBJECTS AND METHODS

2.1. Subjects

Patients, aged 35 – 74, who were diagnosed as having periodontitis. Hypertension was defined and classified based on WHO/ISH. For assessment of the prevalence in the populations of individual risk factors, hypertension was defined as having systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg, or measurements below thresholds but self-reported anti-hypertensive medication. Hypercholesterolemia was defined as measurement of total cholesterol ≥ 6.2 mmol/l (240 mg/dl) at the time of survey, or measurement below threshold but self-reported cholesterol-lowering medication.

Exclusion criteria:
- Less than 10 teeth in mouth.
- Having received any periodontal treatment within last 3 months.
- Emergency situation or disagree to participate.
- Pregnancy.
- Having one of conditions which affect periodontal tissue or systemic health: HIV, diabetes, rheumatoid arthritis, malignant diseases using immunodepressive drugs or undergoing chemotherapy.

2.2. Methods

Research design: cross-sectional descriptive study.

Sample sign: N = 130 hypertensive patients.

Research content:

- Participants' general variables: name, age, gender, address, educational level, profession, blood pressure systolic (BPs) and blood pressure diastolic (BPD) indices, blood pressure classified based on WHO/ISH (2004) [3].

- Periodontal indices: Gingival Index (GI), Simplified Oral Hygiene Index (OHI-S), Probing Pocket Depth (PPD), Clinical Attachment Loss (CAL).

+ Gingival Index (GI) (Loe & Silness, 1963): 6 selected teeth (16, 12, 24, 36, 32, 44) were examined. Scores ranged from 0 to 3 and were classified into 3 levels (mild, moderate, and severe).

+ Simplified Oral Hygiene Index (OHI-S): including 2 components (Simplified Debris Index – DI-S and Simplified Calculus Index (CI-S). Scores were classified into 3 levels (poor, fair, good).

+ Probing Pocket Depth (PPD): 6 selected teeth (16, 11, 24, 36, 31, and 44) were examined. PPD was measured in millimeter from the base of the pocket to the gingival margin in 6 areas of all the teeth excluding the ones with fixed prosthodontics and the third molar. Mean of PPD was obtained by summing all the PPD measured and dividing by the number of areas examined.

+ Clinical Attachment Loss (CAL): CAL was the distance from the cementoenamel junction to the base of the pocket. Periodontal probe was used to measured CAL. Mean of CAL was obtained by summing all the CAL measured and dividing by the number of areas examined. Mean of CAL was classified into 3 levels (Mild: 1-2mm, Moderate: 3-4mm, Severe: no less than 5mm).

- Variables relating to periodontal status:

+ Oral hygiene is assessed by the simple oral hygiene index (OHI-S) divided into three levels of VSRM: poor, moderate and good.

+ Periodic dental check-ups are divided into 3 groups: examination only if there are problems, examination every 6 months and every 12 months.

+ The habit of brushing is the number of brushing times per day divided into four groups: no brushing, brushing once a day, brushing twice a day and brushing> 3 times a day.

+ The habit of using oral hygiene is the frequency of use including dental floss and mouthwash, divided into 3 groups: never used, occasionally and every day.

+ Smoking habit is divided into 3 groups: never smoked, smoked but stopped> 1 year and still smoking.

2.3. Data analysis

The data collected were entered in Excel Sheet Format. Data was then put to statistical analysis using SPSS (Version 18) (Statistical Package for Social Sciences). Mean values of all the periodontal indices were calculated. One-way-ANOVA analysis of variance was used to determine the difference of periodontal indices between specified groups. Chi-square test was applied to determine the distribution of periodontal disease throughout the different age groups.

III. RESULTS

3.1. Participants'general characteristics

Of the 130 included individuals, 55,4% were females. Participants' age ranged from 35 to 74 with a mean values of $57 \pm 8,2$.

Only one third of the participants had graduated from high school.

28,5% of the subjects were farmers, 19,2% were housewives, 20,0% retired, 16,2% were businessmen and 8,5% were civil servants.

Mean values of BPs: 164 ± 17 mmHg, BPd: 93 ± 8 mmHg. Based on WHO hypertension guidelines, 30% of the participants were classified as Grade 1 Hypertension.

The percentage for Grade 2 and Grade 3 were 50% and 20%, respectively.

3.2. Periodontal status

Means values of periodontal indices

Table 1. Means values of periodontal indices according to gender

Periodontal Index (mean ± standard deviation) / Gender	Male	Female	Total	p
GI	1,33±0,40	1,18±0,43	1,25 (±0,42)	0,038*
OHI-S	2,63±0,10	2,23±1,00	2,41(±1,01)	0,027*
PPD (mm)	1,44±0,47	1,31±0,45	1,37 (±0,46)	0,035**
CAL (mm)	3,04±1,06	2,49±0,90	2,73 (±1,11)	0,004*

(*p-value obtained from T-test).

(**p-value obtained from Mann-Whitney test).

Means values of periodontal indices were significantly higher in males (p<0,05) when compared with those among females.

Table 2. Means values of periodontal indices according to age groups

Periodontal Index (mean ± standard deviation) / Age group	35-44	45-54	55-64	65-74	p
GI	1,17±0,31	1,21±0,44	1,29±0,42	1,24±0,44	0,819*
OHI-S	2,50±0,68	2,29±0,85	2,43±1,18	2,5±0,99	0,799*
PPD (mm)	1,23±0,18	1,38±0,48	1,42±0,52	1,27±0,32	0,477**
CAL (mm)	2,40±0,39	2,42±1,02	2,92±1,20	2,94±1,07	0,09*

(* p-value obtained from Anova).

(**p-value obtained from Kruskal – Wallis test).

There was no significant difference in means of periodontal diseases among group ages (p>0,05).

Gingivitis

Table 3. Gingivitis according to gender, age groups

Feature / Gingivitis		Mild n (%)	Moderate n (%)	p
Gender	Male	16 (27,6)	42 (72,4)	0,022
	Femal	34 (47,2)	38 (52,8)	
Age Group	35-44	1 (14,3)	7 (85,6)	0,477
	45-54	19 (44,2)	24 (55,8)	
	55-64	21 (38,9)	33 (61,1)	
	65-74	9 (34,6)	17 (65,4)	
Total		50(38,5)	80(62,5)	

(p-value obtained from Chi-squared test)

Clinical attachment loss

Table 4. Clinical attachment loss (CAL) according to gender, age groups

Level of CAL \\ Feature		Mild n (%)	Moderate n (%)	Severe n (%)	P
Gender	Male	23 (39,7)	28 (48,3)	7 (12,1)	0,082
	Female	37 (51,4)	33 (45,8)	2 (2,8)	
Age group	35-44	3 (42,9)	4 (57,1)	0 (0,0)	0,016*
	45-54	28 (65,1)	14(32,6)	1 (2,3)	
	55-64	22 (40,7)	25 (46,3)	7 (13)	
	65-74	7 (26,9)	18 (69,2)	1 (3,8)	
Total		60(46,2)	61(46,9)	9(6,9)	

(*p-value obtained from Chi-squared test)

Table 5. Levels of hypertension according to levels of CAL

Level of CAL \\ Level of hypertension	Grade 1 n (%)	Grade 2 n (%)	Grade 3 n (%)	Total	p
Mild	23 (38,3)	33 (55,0)	4 (6,7)	60	
Moderate	16 (26,2)	31 (50,8)	14 (23,0)	61	0,001
Severe	0 (0,0)	3 (33,3)	6 (66,7)	9	
Total	39	65	26	130	

(p-value obtained from Chi-squared test)

Levels of hypertension according to levels of CAL were significantly different (p<0,05)

Correlation between periodontal status and levels of hypertension

Table 6. Correlation between periodontal status and levels of hypertension

Level of periodontal diseases	Level of hypertension	
	Value of correlation coefficient	p
Level of gingivitis	0,082	0,325
Level of CAL	0,295	**0,001**

*Kendall rank correlation coefficient, significant when p<0,01.

3.3. Related factors

Oral hygiene

Only 9,3% of the subjects had good oral hygiene while the percentage for fair and poor oral hygiene were 69,2% and 21,5%, respectively.

Oral care habits:

More than three fourths (75,4%) of the examined individuals brushed their teeth twice a day while the others brushed once (16,9%) or thrice (7,7%) a day.

Only 3,8% of the subjects had periodic dental check-ups whereas the others (96,2%) just went to see the dentists when they had problems.

Most of the participants (95,4%) did not use dental floss as the rest (4,6%) did. However, only 1,5% flossed daily.

More than one fourth (28,5%) of the subjects used mouthwash including 18,5% used every day and 10% sometimes used. The others (71,5%) did not use.

Nearly two thirds (65,4%) of the examined individuals did not smoke while the rest quit smoking (19,2%) or smoked (15,4%).

IV. DISCUSSION

4.1. Periodontal status

Periodontal indices

Means values of periodontal indices (GI, OHI-S, PPD, CAL) were higher in male in comparison with those in female and total sample, which partly showed that periodontal status in male was worse than that in female.

Among age groups, participants aged 55 – 64 or 65 – 74 had significantly higher means of the indices compared with the other groups.

Gingivitis

Although all of the subjects had gingivitis, none of them had severe one. 38,5% of the individuals had mild gingivitis while the rest suffered moderate one. Male subjects had more serious gingivitis as their means of GI were higher than that of females and there are more male individuals with moderate gingivitis than female participants. This may be due to the fact that women care more about oral health leading to cleaner mouth (mean of OHI-S in male subjects are higher: 2,63 compared to 2,33 in females ones).

Clinical attachment loss

Percentages of participants with mild, moderate and severe CAL were 46,2%, 46,9% and 6,9%.

Periodontal infections may have effects on the progress of hypertension. In addition, individuals who cared about their oral health also cared more about their cardiovascular health. Furthermore, usually, hypertension patients only spent their time treating their disease.

There is no significant difference between levels of CAL in men and women. Age was also a risk factor for periodontal diseases. According to Nguyen Can's research, percentage of subjects with periodontal diseases rose sharply from 0% (15-19 age group) to 32,5% (40 – 49 age group) and peaked at 43,5% (more than 60 age group). In the current research, levels of CAL were significantly different among age groups. In general, older subjects had more serious CAL. However, participants aged 55-6, not 65-74 – the oldest ones, had the highest rate of severe CAL, which may result from the fact that when people get older, they may lose their periodontally diseased tooth.

Related factors

Relationship between periodontal status and levels of hypertension

The results of this research revealed that Grade 3 hypertension was more common in patients with high CAL and means of periodontal indices were significantly higher in patients with more serious hypertension.

There was just 6,7% of the participants with mild CAL classified as grade 3 hypertension while this percentage for moderate and severe CAL were 23,0% and 66,7%,

respectively. This difference gave a hint of possible link between periodontal diseases and hypertension

Levels of hypertension and levels of CAL had a significant positive correlation coefficient (r = 0,295, p<0,001).

Relationship between periodontal status and levels of hypertension found in this research accorded with findings of other studies [6], [8], [9], [10]. The results of the current research provide more evidence to support the link between the two diseases.

Oral health habits

In general, participants lacked awareness of oral care and using dental floss and mouthwash were still uncommon. Most of the subjects had low level of education. Moreover, knowledge of oral care was not spread widely and it had got tired due to high blood pressure limited oral care habits.

Smoking subjects had higher rate of moderate gingivitis and severe CAL when compared to the other two groups who do not smoke or quit smoking, which proved smoking was an important risk factor of periodontal diseases.

IV. CONCLUSIONS

After conducting a study on the periodontal status in 130 hypertensive patients in the hospital of Can Tho University of Medicine and Pharmacy, here are some conclusions:

Mean of GI: 1,25 ± 0,42, OHI - S: 2,41 ± 0,42, PPD: 1,37 ± 0,46 and CAL: 2,73 ± 1,11.

100% of subjects had gingivitis including 61,5% moderate and 38,5% mild gingivitis.

Percentage of individuals with mild, moderate and severe CAL were 46,2%, 46,9% and 6,9%, respectively.

There was an association between CAL and age groups (p<0,05).

Means of periodontal indices were significantly higher in men in comparison with those in women (p<0,05).

Levels of CAL and levels of hypertension had a significant positive correlation coefficient r=0,295 (p<0,01).

REFERENCES

1. Dao Duy An (2005), Basic awareness and management of hypertensive patient, The 7th Scientific Conference of Cardiovascular in Vietnam Southern Region, p.10-15**.**
2. Nguyen Can (1997), Survey and analysis of periodontal disease situation in the three Southern provinces and Ho Chi Minh City, direction of treatment and prevention, PhD thesis, University of Medicine and Pharmacy, Ho Chi Minh city**.**
3. Chau Ngoc Hoa (2012), Hypertension, Internal Medicine, Ho Chi Minh City, Medical Publishing House**,** p. 43-48**.**
4. Nguyen Thi Thuy Vu (2011), Periodontal status of coronary artery patients, Master's thesis in Medicine, Ho Chi Minh City University of Medicine and Pharmacy.
5. Truong Quynh Nga (2014), Study on the relationship between periodontal status and Body mass index in patients over 35 years old at *Can Tho Hospital* of *Eyes*

and *Odonto- Stomatology*, Graduation Thesis of Doctor of Dental Surgery, Can Tho University of Medicine and Pharmacy.

6. Desvarieux M., Demmer RT, Jacobs RD (2010), "Periodontal bacteria and hypertension: the oral infections and vascular disease epidemiology study (INVEST)", Journal of Hypertension, 28(7), p. 1413-1421.
7. Esther M W (2012), Clinical practice of the dental hygienist 10th, Lippincott Williams and Wilkins, 22, p. 320.
8. Higashi Y, Goto C, Hidaka T (2009), "Oral infection-inflammatory pathway, periodontitis, is a risk factor for endothelial dysfunction in patients with coronary artery disease", Atherosclerosis, 206(2), p. 604-610.
9. Ogawa Y (1998), "Epidemiological study on the relationship between hypertension and dental disease in Japanese factory workers", Sangyo Eiseigaku Zasshi, 40(6), p. 235-240.
10. Zhang L, Li YF, Liang ZZ (2011), "The association between chronic periodontitis and hypertension in rural adult Uygur residents", Zhonghua Xin Xue Guan Bing Za Zhi, 39(12), p. 1140-1144.

STUDY CLINICAL FEATURES AND SOME RISK FACTORS OF CEREBRAL VENOUS THROMBOSIS

Le Van Minh*

Faculty of Medicine, Can Tho University of Medicine and Pharmacy, Vietnam

*Corresponding author: lvminh@ctump.edu.vn

ABSTRACT

Background: Cerebral venous thrombosis (CVT) is a rare type of cerebrovascular disease that can occur at any age, including in neonates, and it accounts for 0.5% of all stroke. The widespread use of neuroimaging now allows for early diagnosis and has completely modified our knowledge on this disorder. CVT is more common than previously thought and it is recognized as a non-septic disorder with a wide spectrum of clinical presentations, numerous causes, and usually a favorable outcome with a low mortality rate. Objectives: Determine the clinical characteristics and risk factors of cerebral venous thrombosis. Subjects: 59 patients ≥ 16 years of age were diagnosed cerebral venous thrombosis at Cho Ray Hospital during January 2010 to May 2012. In the control group, 57 patients with a periodic health examination were randomly selected at Cho Ray Hospital. Method: The prospective, cross-sectional descriptive study with the control group was conducted. Results: The common symptoms of CVT in this study were headaches (98.31%), paralysis (57.63%), seizure (50.85%), consciousness disorders (37.29%), cranial nerve paralysis (32.2%), papilledema (30.5%). Coagulation studies included the following tests: antithrombin, protein C, protein S, and factor V Leiden. The proportion of cases with congenital thrombophilia was 66.7%: with Odds ratios for CVT found to be 2.25 (95% CI, 0.93 to 5.46) for factor V Leiden mutation, 2.76 (95% CI, 0.8 to 9.49) for protein C deficiency, and 1.7 (95% CI, 0.5 to 5.6) for ATIII deficiency. The oral contraceptive pill appeared to be an important additional risk factor with odd ratio was 4.05 (KTC 95%, 0.88-25.1). Conclusions: Cerebral venous thrombosis is a challenging condition because of its variability of clinical symptoms and signs.