ORIGINAL ARTICLE

IDENTIFICATION OF RELATIONSHIP BETWEEN ORAL DISORDERS & HEMODYNAMIC PARAMETERS

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ABSTRACT

Measurement of hemodynamic factors might be helpful regarding assessment of causal systemic association, in relation to Oro-dental disorders. Therefore aim of this study was to evaluate a relationship between basic hemodynamic parameters & Oro-dental disorders. This cross sectional study was conducted in the Baqai Dental College Hospital Outpatient Clinic. The random sampling was done using predesigned questionnaires. All the patients who had definitive oro-dental problems were included in this study. 100 patient's data was found to be complete and was evaluated by using SPSS version 20. The data showed mean age group was 34.3; SD 15.4. 51% were males and 73% were married. 12% patients were diabetic & hypertensive. Clinical oro-dental problems were mainly dental pain alone, dental pain with swelling, dental pain with bleeding, and or dental pain with swelling - bleeding. Assessment of basic hemodynamic parameters showed mean respiratory rate per minutes was 20.4; SD 2.9. The mean heart rate per minutes was 79.86; SD 13.5. 47% found to have elevated blood pressure and 90% patients were afebrile. Statistical examination showed males / females had pain alone 27.45% & 20.40% and pain with swelling was 37.25% & 32. 65% respectively. The correlation of basic hemodynamic status showed that despite verbal denial of elevated blood pressures, 47% had elevated BP, tachypnea, mild tachycardia without fever. This clearly identifies that patients with oro-dental problems were hemodynamically stressed.

Key Words: *Oro-Dental Disorders, Systemic Association, Hemodynamic Stress, Non-Inflammatory Disorders.*

INTRODUCTION

Oral and Dental health problems are a global issue.[1] Oro-Dental disorders may present as pain, bleeding, swelling, caries, and ulcers that often get complicated by existence of co-morbid medical conditions.[2-4] Oral health is a cumulative reflection of overall metabolic reactions that happen inside the physical body. Oral disorders may be localized or may be the manifestations of systemic disorders.[5,6] The overall metabolic status can be indirectly assessed by the measurement of simple clinical hemodynamic parameters such as blood pressure, respiratory rate, pulse rate and temperature.[7] Derangement in basic hemodynamic parameters might be the result of a disease process or mental stress that causes activation of hypothalamic-pituitary adrenal axis – HPA axis. Activated HPA - axis results in release of catabolic hormones inside the body and causes change in body pH, metabolic reactions, mood etc. These changes in turn are responsible for abnormal and premature decay of human tissues including teeth and gingiva.[8-11] Measurement of hemodynamic parameters might be helpful regarding identification of causal systemic association of oro-dental disorders.

The aim of this study was to evaluate and assess a relationship between basic hemodynamic parameters and oro-dental disorders.

METHODOLOGY

This cross sectional study was conducted in the Baqai Dental College Hospital Outpatient Clinic from 30th January to 10 February 2017. The random sampling was done by using predesigned questionnaires

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that were filled by trained medical personnel. All the patients who had definitive oro-dental problems diagnosed by calibrated dental practitioners were included in this study and were informed about the objectives and verbal consent was obtained. The study subjects without definitive pathological oro-dental condition were excluded from the study. 150 patients were assessed during the study period. Therefore by using exclusion criteria 100 patient's data was found to be complete and appropriate for final statistical analysis that was subsequently carried out by using SPSS version 20.

RESULTS

The descriptive statistical analysis showed age range 5-80 years with mean age group 34.3; SD 15.4. Whereas 29, 24, 16, 8% subjects belonged to 11-20, 21-30, 31-40 years groups respectively. 51% were males and 49% were females. 73% patients were found to be married. 88% patients verbally denied having diabetes and hypertension. In respect of oro-dental presentation 28, 26, 5, 11% found to have dental pain alone, dental pain with swelling, dental pain with bleeding, dental pain - swelling- bleeding respectively. The assessment of basic hemodynamic parameters showed respiratory rate per minute ranged 14-28. Mean respiratory rate noted was 20.4, SD 2.9. 20, 9, 24% subjects had respiratory rates of 20, 21 and 22 minutes respectively. 90% patients were afebrile. Whereas 9 and 1% were having 99 and 100°F respectively. The heart rate per minutes ranged 50 -130 beats with mean of 79.86, SD 13.5. The heart rate variability was quite pronounced; moreover 7, 8, and 9% pulse rate per minutes recorded was 70, 78 and 72 beats/ minutes. Finally 53% found to have normal blood pressure recordings; whereas 47% found to have elevated blood pressure. Table 1 cross tab. statistical examination showed pain alone and pain with swelling were more common in male population. Table 2 shows that married population had more pronounced symptoms.

DISCUSSION

This study points out new relations between teeth / gingiva with fundamental health parameters in association with hypothalamic-pituitary adrenal axis – HPA axis. The data shows that studied population had clearly identified oro-Dental problems. The basic hemodynamic status of this group of patients showed that despite verbal denial of elevated blood pressures, 47% had elevated BP, tachypnea, mild tachycardia without fever. These findings cumulatively indicate that study population was hemodynamically stressed. Therefore, it is important to link dental presentations with internal hemodynamic instability. Obvious hemodynamic instability has strong known link with HPA - axis that may be compounded with low esteem, as a part of overall external reasons of stress (life style, mental stress, work load, emotional upsets etc.).[7,8] This may go with the claim made by Davis that low self-esteem is associated with dental loss.[8-10] It can be hypothesized that internal hemodynamical stress might play a role in the pathogenesis of oro-dental problems. The judicious explanation of this recorded hemodynamic instability in the absence of recordable elevated temperature may favor non-infectious and non-inflammatory origin of oral disorders. The other explanation of this elevated respiratory rates with increase pulse rates might be routine anxiety and stress that usually happens in patients attending dental clinics.[8,12] Gender based comparison of oro-dental complains revealed marginal male dominance. Whereas married population (73%) had more problems as compared to unmarried; this marital dominance can be considered as an insignificant, due to numerical ascendency in the initial data as only 27% were unmarried. The study results also shows

TABLE 1: CROSS TAB GENDER BASED ANALYSIS IN CONJUNCTION WITH SYMPTOM SPECTRUM

Gender: Symptoms Cross tabulation							
		None	Pain	Bleeding	Swelling	Pain & Swelling	Pain & Bleeding
Sex	Male	13	16	1	0	14	3
	Female	10	12	0	1	12	2
	Total	23	28	1	1	26	5

TABLE 2: CROSS TAB MARITAL STATUS EXAMINATION WITH JUXTAPOSITION SYMPTOM SPECTRUM

Marital Status: Symptoms Cross tabulation							
		None	Pain	Bleeding	Swelling	Pain & Swelling	Pain & Bleeding
Marital Status	Married	16	22	0	1	21	0
	Single	7	6	1	0	5	5
	Total	23	28	1	1	26	5

that middle aged population were found to have more dental suffering. The undying reason of predominant middle age population may be that dental visits might not be easy for extreme age groups.

CONCLUSION

The correlation of basic hemodynamic status showed that despite verbal denial of elevated blood pressures, 47% had elevated BP, tachypnea, mild tachycardia without fever. This clearly identified that patient with Oro-Dental problems were hemodynamically stressed.

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