



Full Length Research Article

ORAL HEALTH STATUS OF VARIOUS SKELETAL DISORDER PATIENTS ATTENDING ORTHOPAEDIC OPD OF RAMA DENTAL COLLEGE HOSPITAL & RESEARCH CENTER, KANPUR

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ARTICLE INFO

Article History:

Received 13th April, 2014

Received in revised form

14th May, 2014

Accepted 28th June, 2014

Published online 25th July, 2014

Keywords:

Skeletal Disorder,
Oral Health,
Rheumatoid Arthritis

ABSTRACT

Oral health is an essential and integral component of general health and this is the epitome that all of us strive to achieve. Chronic systemic diseases affecting the skeletal system, like Rheumatoid arthritis, Osteoarthritis, Osteoporosis, Skeletal tuberculosis, Spondylosis has great impact on all aspects of life for those affected from disease onset and onwards. The involvement of the upper limb, TMJ, vertebral column can cause considerable physical disability and discomfort to the patient which may hamper the routine daily activities including oral and general hygiene practices in daily life. Three hundred and eighty six patients were included in study and were randomly allocated into two groups study and control group. They were interviewed and examined using WHO 1997 proforma. The patients in the skeletal disorder group had higher caries prevalence than the normal population. Most of the patients were affected by advanced periodontitis as compared to control group. Various skeletal disorders affecting different patients have potential for developing oral health problems. Thus oral health care for skeletal disorder patients should be taken as an important issue.

INTRODUCTION

Oral health is an essential and integral component of general health and this is the epitome that all of us strive to achieve. It is a continuously ongoing process where all the parts and structures of the body function optimally to maintain the homeostasis called health. Chronic systemic diseases affecting the skeletal system, like Rheumatoid arthritis, Osteoarthritis, Osteoporosis, Skeletal tuberculosis, Spondylosis has great impact on all aspects of life for those affected from disease onset and onwards. The involvement of the upper limb, TMJ, vertebral column can cause considerable physical disability and discomfort to the patient which may hamper the routine daily activities including oral and general hygiene practices in daily life. This in turn can result in the poor oral hygiene statuses. Increased plaque accumulation can lead to dental caries, gingivitis and periodontitis. These patients most of the times are on drugs like NSAIDS, Steroids, and Immunosuppressant which trigger more amount of osteoclastic activity resulting in cortical bone resorption. The loss of alveolar bone leads to more periodontal disease^{1,2}.

Very few studies are available regarding the oral health status of this group of patients. That's why there is a need to assess the oral health status of these patients which can throw light on the hidden factors affecting the oral health status of these groups of patients. There fore this study was deigned and carried out in the Orthopedic OPD of Rama Dental College Hospital & Research Centre, Kanpur.

Aim and Objectives

- To assess the oral health status of patients with various skeletal disorders attending the Rama Dental College Hospital & Research Centre, Kanpur.
- To compare the oral health of the patients with chronic skeletal disorders with that of the patients who are not suffering from chronic disorders.
- To suggest or recommend appropriate preventive methods.

MATERIALS AND METHODS

The study was conducted at Rama Dental College Hospital & Research Centre, Kanpur, and included all the patients who attended the orthopedic out-patient facility. The study group comprised of 386 patients depending on the type of the skeletal disorder they were suffering. The study was carried out from

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January 2008 to March 2008. All patients who met the standard inclusion and exclusion criteria during the study period were considered and the patients were randomly allocated into two groups, study group & control group with each consisting of 193 subjects. All the subjects gave an informed consent.

Inclusion criteria

- ♦ The patients who had a chronic problem like Arthritis, Osteoporosis, and Skeletal tuberculosis.
- ♦ Only those cases which were diagnosed previously were considered for the study group.
- ♦ Patients who had acute problems like sprain, low backache, and minor trauma and had no other systemic diseases were included in the control group.

Exclusion criteria

- ♦ Patients with fractured limbs, acute inflammatory conditions like osteomyelitis, pyoarthritis etc were not considered for this study.

The study consisted of an interview and intraoral examination. During the course of the interview, demographic details, dental history, personal habits and oral hygiene practices were enquired. The medical history and history of skeletal disease, duration and treatment with medication were also recorded. Oral examination was conducted as per the WHO 1997 proforma. All the patients were examined in the OPD under artificial light. Plane mouth mirror, CPI probe and torch light were used to examine the oral cavity. Single examiner and single recorder were maintained through out the study period. Statistical analysis was done by using SPSS 10 and Chi-square test was used for test of significance.

RESULTS

The study was conducted at Rama Dental College Hospital & Research Centre, Kanpur. The study group comprised of 386 patients. The subjects were divided into a number of subgroups with equal class intervals. Those were as follows <20, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79. A total of 26 subjects were below 20 years out of which 14(4.14%) were in case group and 12 (2.59%) were in control group. A total of 44 subjects were in between 60-69 out of which 25(7.25%) were in case group and 19(4.14%) were in control group, and only 6 were between 70-79 age group out of which 2(0.51%) were in case and 4(1.03%) were in control group (Table 1).

Table 1. Age wise distribution of subjects

Age Group	Type		Total
	Case n (%)	Control n (%)	
<20	14 (4.1)	12 (2.5)	26
20-29	15 (3.8)	14 (3.6)	29
30-39	46(11.9)	67(17.3)	113
40-49	38(9.8)	27(6.9)	65
50-59	53(13.7)	52(13.4)	105
60-69	25(7.2)	19(4.1)	44
70-79	2(0.5)	4(1.03)	6
Total	193	193	386

There were totally 220(57.2%) males and 166(42.8%) females in case and control groups, respectively. Out of 386 subjects 310 were in a habit of using tooth brush, 43 were in a habit of using finger and 33 were in a habit of using datoon. 159 (41.19%) brush users were in the case group and 151(39.11%) were in the control group (Table 2). Out of 386 subjects 160(41.4%) in the case group and 178 (46.11%) in the control group did not have any complaint of TMJ, Where as 33(8.56%) of the case group and 15(3.88%) of the control group had symptoms regarding TMJ (Table 3).

Table 2. Distribution according to oral hygiene

Particulars	Type		Total
	Case n (%)	Control n (%)	
Brush	159(41.2)	151(39.1)	310
Finger	18(4.7)	25(6.5)	43
Datoon	16(4.2)	17(4.4)	33
Total	193	193	386

Table 3. Distribution according to TMJ symptoms

Particulars		Type		Total
		Case n (%)	Control n (%)	
TMJ	No	160(41.4)	178(46.1)	338
Symptoms	Yes	33(8.6)	15(3.9)	48
Total		193	193	386

Mean number of sextants with score 0 was found 0.39 among the case group as compared to 1.14 among the control group. Similarly mean number of sextants with score 1 was found to be 0.89 among the case group as compared to 1.29 among the control group. When score 2 was considered it was found to be 2.97 among the case group as compared to 1.31 among the control group. There were a mean if 2.18 sextants with score 3 among the case group as compare to 0.93 among the controls. Mean number of sextants with score 4 was 0.65 among case group as compared to 0.93 among control group. The mean sextant with score of 5 was found to be 0.23 among the case group as compared to 0.01 among the control group. (Table 4)

Table 4. Mean number of sextants with Various CPI scores

Particulars	Mean number of sextants	
	Cases	Controls
CPI score0	0.39	1.14
CPI score1	0.89	1.29
CPI score2	2.97	1.31
CPI score3	2.18	0.93
CPI score4	0.65	0.08
CPI score5	0.23	0.01

There were 136(35.2%) cases as compared to 130(33.6%) controls that had none of the sextants healthy. Where as 17(4.40%) of the cases as compared to 42(10.88%) of the controls had at least 1 sextant healthy. Similarly 18(4.66%) of the cases as compared to 21 (5.44%) of the controls had at least 2 sextants healthy. There were 17(4.4%) cases as compared to none of the controls had at least 3 sextants healthy. Only 5(1.29%) of the cases and none of the controls had 4 healthy sextants. (Table 5). Mean number of sextants with loss of attachment score 0 was found to be 2.12in case group as compared to 2.73 in case of control group. Similarly the mean number of sextants with score 1 was found to be 1.09 among the case group as compared to 1.97 in the control group. The mean number of sextants among the case group with loss of attachment score 2 was found to be 0.84 as compared to 0.45

among the control group. Similarly score 3 was found to be 0.59 in cases as compared to 0.42 among the controls (Table 6)

Table 5. Distribution according to number of healthy sextants

Particulars	Number of sextants	Type		Total
		Case	Control	
Healthy	0	136(35.2)	130(33.6)	266
Sextants	1	17(4.4)	42(10.8)	59
	2	18(4.6)	21(5.4)	27
	3	17(4.4)	0(0)	3
	4	5(1.3)	0(0)	2
Total		193	193	386

Table 6. Mean number of sextants with various scores of loss of attachment

Loss of attachment score	Mean no. of sextants	
	Case	Control
Score0	2.12	2.93
Score1	1.09	1.97
Score2	0.84	0.45
Score3	0.59	0.42
Score4	0.01	0.001

Mean number of decayed teeth per person was 2.13 among the cases as compared to 1.79 among the controls. Similarly when mean number of missing teeth were taken in to consideration it was found to be 2.83 among cases as compared to 2.09 among controls. When filled component was taken in to account it was found to be 0.024 among cases to 0.049 among controls. When mean DMFT was compare between the cases and controls it was found to be 4.05 in cases as compared to 3.11 among control (Table7).

Table 7. Distribution according to mean decayed, missing and filled teeth

Particulars	Type	N	Mean	Std.	Std. Error
				Deviation	Mean
Decayed	Case	193	2.13	2.68	.21
	Control	193	1.79	1.63	.13
Missed	Case	193	2.83	4.22	.33
	Control	193	2.09	5.82	.45
Filled	Case	193	.024	.22	.017
	Control	193	.049	.22	.017
DMFT	Case	193	4.05	4.80	.38
	Control	193	3.11	5.61	.44

Table 8. Distribution according to prosthetic need

Particulars	Type		Total	
	Case	Control		
Prosthetic	No prosthesis needed	90(23.3)	141(36.5)	231
Need	Need for 1 unit prosthesis	43(11.1)	39(10.1)	82
	Need for multi unit prosthesis	57(14.7)	11(2.8)	68
	Need for combination prosthesis	3(0.7)	2(0.5)	5
Total		193	193	386

There were 182 (47.1%) of the cases and 178(46.11%) of the controls who had no prosthesis at the time of examination. Where as 11(2.84%) of the cases and 15(3.88%) of the controls had partial denture in their mouth at the time of examination. There were 90 (23.31%) cases and 141(36.52%) controls, which didn't need any prosthesis. 43 (11.13%) of the cases and 39(10.1%) of the controls were in a need of 1 unit prosthesis. Where as 57(14.76%) of the cases and 11(2.84%) of

the controls were in need of multiunit prosthesis. Similarly 3(0.77%) of the cases and 2(0.51%) of the control were in need of combination of one and multiunit prosthesis (Table 8)

DISCUSSION

Out of 386 subjects 160(41.4%) in the case group and 178 (46.11%) in the control group did not have any complaint of TMJ, Where as 33(8.56%) of the case group and 15(3.88%) of the control group had symptoms regarding TMJ. When all the subjects were examined for signs of TMJ problems, 125(32.38%) of case group and 151 (39.11%) of the control group did not have any sign regarding TMJ problem where as 68(17.6%) of the cases and 42(10.81%) of the controls had TMJ tenderness or pain. Similar studies have found reduced mobility in the RA group and impaired TMJ function in controls (p < 0.05)¹¹. In another study it was found that significant difference exists in TMJ disorder among the persons affected by RA and other skeletal disorder as compared to normal individuals³. Mean number of sextants with score 0 was found 0.39 among the case group as compared to 1.14 among the control group. Similarly mean number of sextants with score 1 was found to be 0.89 among the case group as compared to 1.29 among the control group. When score 2 was considered it was found to be 2.97 among the case group as compared to 1.31 among the control group. There were a mean if 2.18 sextants with score 3 among the case group as compare to 0.93 among the controls. Mean number of sextants with score 4 was 0.65 among case group as compared to 0.93 among control group. The mean sextant with score of 5 was found to be 0.23 among the case group as compared to 0.01 among the control group. Statistically significant difference was found between the mean number of sextants with CPI score 0, 2, 3, 4 and 5 with p value < 0.02, 0.1, 0.03, 0.02 respectively. The high prevalence of periodontitis among the case group is similar to the findings of the study by FB.Mercado et.al^{4,5}.

Mean number of sextants with loss of attachment score 0 was found to be 2.12in case group as compared to 2.73 in case of control group. Similarly the mean number of sextants with score 1 was found to be 1.09 among the case group as compared to 1.97 in the control group. The mean number of sextants among the case group with loss of attachment score 2 was found to be 0.84 as compared to 0.45 among the control group. Similarly score 3 was found to be 0.59 in cases as compared to 0.42 among the controls. Statistically significant difference was found between the case and control group with loss of attachment scores 0 and 2 with p < 0.05, and 0.03 respectively. This is in agreement with the high prevalence of periodontal disease found done by Ribeiro J et al⁶. Mean number of decayed teeth per person was 2.13 among the cases as compared to 1.79 among the controls. Similarly when mean number of missing teeth were taken in to consideration it was found to be 2.83 among cases as compared to 2.09 among controls. When filled component was taken in to account it was found to be 0.024 among cases to 0.049 among controls. When mean DMFT was compare between the cases and controls it was found to be 4.05 in cases as compared to 3.11 among controls. Statistically significant difference was found in both decayed and missing component with p value, 0,02 and 0.03 respectively. The mean DMFT score was higher in case group compared to control group which is similar to the study conducted by Miranda LA^{7,8}.

Conclusion

The patients in the skeletal disorder group had higher caries prevalence than the normal population which may be due to following reasons. Due to degenerative diseases of the joints patient may not perform the regular oral hygiene procedure optimally. In some of the patients the TMJ was affected leading to reduced oral opening for which brush may not reach the posterior areas for proper mechanical cleaning. Most of the patients were affected by advanced periodontitis as compared to control group which may be due to following reasons. Same mechanism might be going on in the periodontium as in the skeletal system. Long term intake of NSAID and immunosuppressant may trigger the bone resorption. Due to improper oral hygiene practice there is chance of greater plaque accumulation leading to gingivitis and periodontitis. Due to more decayed missing teeth patients with these disorders were in a greater need of treatment for restoration, prosthesis etc. There was no significant difference between the enamel hypoplasia, extra and intra oral lesions.

Recommendations and Suggestions

As technology and medicine advance, dentists increasingly will have to treat patients with complex medical conditions. Various skeletal disorders affecting different patients have potential for developing oral health problems due to direct or indirect reasons. Hence these following suggestions should be considered as part of dental protocols for the management of these patients.

- Oral health care for skeletal disorder patients should be taken as an important issue.
- Every effort should be made to emphasize the importance of early intervention in dental health and to encourage the orthopaedician to make the dental referral as early as possible to avoid complex dental treatment in future.
- At hospital admission, dental consultations should be requested in order to register any specific dental problem, to avoid dental treatment and to eliminate and control oral infections.
- Specific oral hygiene instructions and oral hygiene measures should be advised to these people like use of long handled tooth brush, use of mechanical tooth brush.

- Chair side counseling would help to motivate these patients and their caretakers to maintain oral hygiene procedures and follow dietary advice.
- Oral diseases and manipulation of these diseases contributes significantly as a risk factor to morbidity and mortality in these patients. Therefore every effort should be made to eliminate oral sources of infection by regular use of antimicrobial mouth rinses.
- Since number of studies conducted is very less, many more studies are needed to gain insight of the factors affecting oral diseases in this group of patients

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