

CHANGES IN ORAL RADIOLOGICAL IMAGE IN PATIENTS EXPOSED TO OCCUPATIONAL HAZARDS

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Abstract: The article presents a comparative study of radiographic images on panoramic radiographs performed in two groups of patients, groups that are homogeneous in terms of age group, seniority, gender and training but nevertheless differ hazards work to which they are exposed. Research group is exposed to occupational hazards such as copper cyanide, zinc, nickel and hydrochloric acid vapor and control group is not exposed to such hazards.

Cuvinte cheie:

ortopantomografie, noxe profesionale

Rezumat: Articolul prezintă un studiu comparativ al imaginilor radiografice, pe ortopantomografii, efectuate la două loturi de pacienți, loturi care sunt omogene din punct de vedere al grupei de vârstă, al vechimii în muncă, al sexului și al pregătirii profesionale, dar care însă diferă prin noxele profesionale la care aceștia sunt expuși. Lotul de cercetat este expus la noxe profesionale de tipul cianurilor de cupru, zinc, nichel și la vapori de acid clorhidric, iar lotul martor nu este expus la astfel de noxe.

INTRODUCTION

Imaging the panoramic radiographs is a diagnostic method that is missing from current practice dentistry doctor and help complete and comprehensive diagnosis of many respiratory diseases oral and oro-maxillo-facial surgery.(1)

With panoramic radiographs opens a universe that guides investigational treatment plan by highlighting the many different structures appeared opaque or radiolucent film through a window orthopantomography as unlimited opportunities for oral health knowledge.

This investigational method reveals hidden cavities as the focal point and that often go unnoticed in a detailed clinical examination, numerous apical and periapical processes in various stages of development intraosseous, scrap dental units included in root or bone cysts of the jaws, concepts consistency and density of bone structures, temporomandibular joint disorder, maxillary sinus, palate bone, the septum nasal, etc.(1,3)

Technology making this type of radiography is based on X-ray emission properties that penetrate solid structures and is thus revealed an image in shades of white to black, white being dense radiopacity corresponding structures, gray and soft tissue structures black hollow structures, radiolucent.(2,4)

WORKING HYPOTHESIS

We started from the premise that current research into human exposure to environmental toxins can cause illness and we plan, illustrating and analyzing radiographic images on panoramic radiographs in patients exposed to occupational hazards such as copper, zinc, nickel, hydrochloric acid radiographic image Oral health is mirror more accurately reveal the health of the bones, the marginal periodontium and dental structures.

Knowledge effects on workers exposed to occupational hazards systematically toxic environment, would provide occupational medicine specialist doctors of dental medicine, family medicine, especially preventive and curative

methods necessary to take technical and organizational measures to be taken.

METHODS

Study material used in this study to assess occupational exposure to occupational hazards existing in two groups of patients (as shown in Fig. 1) representing a total number of 204 subjects divided into two groups, as follows

1. Rereached group lot of 102 male subjects exposed to occupational pollutants such as cyanide, hydrochloric acid vapor, which can affect oral health. These subjects are professional workers in a galvanized plating section of a private company from Sibiu
2. Control group, consisting of the same number of subjects as the group also looked at men, but glassmakers working as laborers on a section of glass melting and processing within a private company from Sibiu

Lots included in this study are homogeneous in terms of age and seniority, in terms of sex, training, both groups having common contaminant exposure to noise, but that is not relevant but the present study on oro-dental health.

The working method consisted of radiographic imaging examination of patients included in the study using panoramic radiographs made with the same camera in all subjects. Panoramic radiographs of subjects covered by this study were examined in detail in the examination negatoscope and so I followed:(1)

- consistency and content frontal sinus and maxillary;
- skeletal symmetry and position of the nasal septu;
- alveolar bone densit;
- depth of periodontal pocket;
- presence of root residue;
- presence of teeth include;
- dental root positio;
- presence of periapical pathological processe;

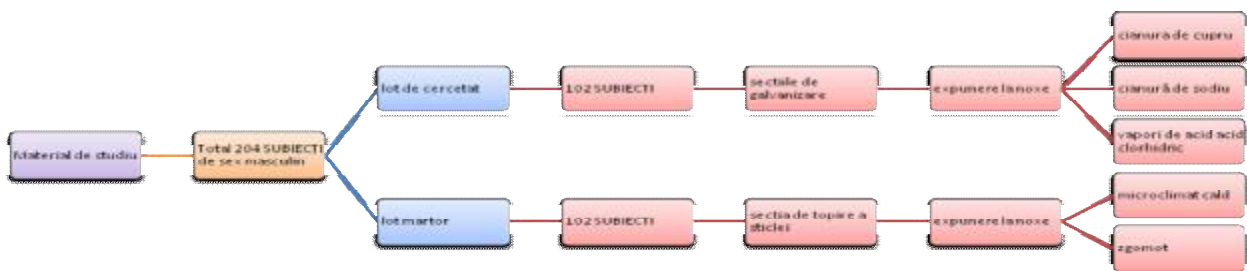
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- presence of fracture;
- presence of bone formatio;
- bone thicknes;
- the number of periodontal pocke;
- height periodontal pocket;
- periodontal space widenin;
- the degree of implantation of teet;
- outline periodontal pocket;
- number of teeth present in the arc;

- the degree of bone rezorbție;
 - inflammation of the sinus mucos;
 - septa resorption interradicular;
 - resorption of interdental sept;
- All these data were recorded on one sheet of each patient examination, centrally and processed statistically

Figure no. 1. Structure of curriculum



RESULTS AND DISCUSSIONS

We measured on panoramic radiographs in the right maxillary bone thickness of three parts: six-year molar on both arcade and nasal spina and the statistically relevant data we obtained the following tables no. 2 and 3.

From table no. 1, is noted that: the average thickness of the jaw bone in right molar of six on the right is the control group (17.86%) significantly higher than average molar entitled to the same group studied (8.88%).

Table no. 1. Statistics on the average bone thickness measured on panoramic radiographs upper jaw

Report				
lot		grosimea osului la maxilar M6 dreapta	grosimea osului la maxilar spina nazala	grosimea osului la maxilar M6 stanga
1	Mean	8.88	13.60	9.04
	N	102	102	102
	Std. Deviation	3.77	3.52	3.72
	Minimum	2	7	2
	Maximum	19	20	19
	Median	9.00	14.00	9.00
2	Mean	17.86	22.94	17.83
	N	102	102	102
	Std. Deviation	1.98	1.73	1.95
	Minimum	15	20	15
	Maximum	21	26	21
	Median	18.00	23.00	18.00
Total	Mean	13.37	18.27	13.44
	N	204	204	204
	Std. Deviation	5.41	5.44	5.31
	Minimum	2	7	2
	Maximum	21	26	21
	Median	15.00	20.00	15.00

Average bone thickness nasal spina right to the jaw in the control group (22.94%) significantly higher than average in the right nasal spina investigational group (13.6%). Media thickness in the right maxillary molar bone in six years on the left is the control group (17.83%) significantly higher than the average in the same molar right to group investigated (9.04%)

Table no. 2. Differences in statistically between the two groups on the jaw bone thicknes

ANOVA Table

	n of Squa	df	ean Squa	F	Sig.
grosimea osult Between C (Combin	113.020	1	113.020	53.840	.000
M6 dreapta * l Within Groups	830.667	202	9.063		
Total	943.686	203			
grosimea osult Between C (Combin	452.005	1	452.005	77.898	.000
spina nazala * Within Groups	556.167	202	7.704		
Total	608.172	203			
grosimea osult Between C (Combin	944.162	1	944.162	47.091	.000
M6 stanga * l Within Groups	782.010	202	8.822		
Total	5726.172	203			

Significant differences statistically seen from the data presented in Table 2, in terms of the average thickness of the jaw bone in right molar of six on the right, the left and right of the mean thickness of the spleen nasal bone

We performed similar measurements on panoramic radiographs and mandibular arch in the right median line and six-year molars and date obtained by statistical processing are presented in tables no. 3 and 4.

Data analysis of this table shows that the average thickness of the jaw bone in right molar of six on the right is the control group (36.48%) significantly higher than the average in the same molar right to group studied (18.78%).

Also, the average thickness of the jaw bone in right median line in the control group (40.77%) significantly higher than average in the right mandibular median line in the group of researchers (23.88%) and the average thickness of the jaw bone in right molar of six years on the is left in the control group (36.7%) significantly higher than average in the right molar same batch of researchers (19.10%).

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Table no. 3. Statistics on the average bone thickness measured on radiographs lower jaw

		Report		
lot		grosimea osului la mandibula M6 dreapta	grosimea osului la mandibula linia mediana	grosimea osului la mandibula M6 stanga
1	Mean	18.78	23.88	19.10
	N	102	102	102
	Std. Deviation	5.59	5.69	5.87
	Minimum	10	13	9
	Maximum	35	39	35
	Median	18.00	23.00	18.00
2	Mean	36.48	40.77	36.70
	N	102	102	102
	Std. Deviation	2.51	2.64	2.42
	Minimum	32	35	32
	Maximum	40	45	41
	Median	36.50	40.00	37.00
Total	Mean	27.63	32.33	27.90
	N	204	204	204
	Std. Deviation	9.87	9.55	9.89
	Minimum	10	13	9
	Maximum	40	45	41
	Median	32.00	37.00	33.00

Table no. 4. Differences in statistically between the two groups on the jaw bone thickness

ANOVA Table					
	Sum of Squares	df	Mean Square	F	Sig.
grosimea osului la ma M6 dreapta * lot	15970.711	1	15970.711	850.152	.000
Between Groups	3794.716	202	18.786		
Within Groups	19765.426	203			
Total	14552.593	1	14552.593	740.384	.000
grosimea osului la ma linia mediana * lot	3970.402	202	19.655		
Between Groups	18522.995	203			
Within Groups	15794.240	1	15794.240	783.776	.000
grosimea osului la ma M6 stanga * lot	4070.598	202	20.151		
Between Groups	19864.838	203			
Within Groups					
Total					

Of statistically significant differences observed between the two groups regarding mandibular bone thickness (panoramic radiographs examined) in both the left and the right side next to the center line.

Among the many key points of this method is evaluation and radiographs observrea and measuring the degree of implantation of bone and teeth at the front of the saddle so maxilr lter and the mandible, data are presented in tables no. 5 and 6

Table no. 5. Statistics on the average degree of bone implant measured on radiographs

		Report			
lot		gradul de implantare al dintilor la maxilar, grupul frontal	gradul de implantare al dintilor la maxilar, grupul lateral	gradul de implantare al dintilor la mandibula, grupul frontal	gradul de implantare al dintilor la mandibula, grupul lateral
1	Mean	2.04	1.96	2.15	2.07
	N	102	102	102	102
	Std. Deviation	.63	.47	.52	.47
	Minimum	0	0	0	0
	Maximum	3	3	3	3
	Median	2.00	2.00	2.00	2.00
2	Mean	.99	1.01	.99	1.07
	N	102	102	102	102
	Std. Deviation	9.90E-02	.17	9.90E-02	.29
	Minimum	0	0	0	0
	Maximum	1	2	1	2
	Median	1.00	1.00	1.00	1.00
Total	Mean	1.51	1.49	1.57	1.57
	N	204	204	204	204
	Std. Deviation	.69	.59	.69	.64
	Minimum	0	0	0	0
	Maximum	3	3	3	3
	Median	1.00	1.00	1.00	2.00

From this table you can see that: the average level of the maxillary anterior teeth implantation of the investigational group (2.04%) is significantly higher than average level of the same tooth implant group (0.99%), the average degree of tooth

implantation of maxillary lateral area of investigation in the group (1.96%) is significantly higher than average level of the same tooth implant group (1.01%), the average degree of implantation of the mandibular anterior teeth examined group (2.15%) is significantly higher than average level of the same tooth implant group (0.99%) and the average degree of mandibular posterior teeth implantation of the investigational group (2.07%) is significantly higher than average level of the same tooth implant group (1.07%).

Table no. 6. Differences in statistically between the two groups regarding the degree of implantation of teeth

ANOVA Table					
	Sum of Squares	df	Mean Square	F	Sig.
gradul de implantar dintilor la maxilar, grupul frontal * lot	56.123	1	56.123	277.635	.000
Between Groups	40.833	202	.202		
Within Groups	96.956	203			
Total	46.123	1	46.123	375.171	.000
gradul de implantar dintilor la maxilar, grupul lateral * lot	24.833	202	.123		
Between Groups	70.956	203			
Within Groups	68.255	1	68.255	496.233	.000
gradul de implantar dintilor la mandibul grupul frontal * lot	27.784	202	.138		
Between Groups	96.039	203			
Within Groups	51.000	1	51.000	331.903	.000
gradul de implantar dintilor la mandibul grupul lateral * lot	31.039	202	.154		
Between Groups	82.039	203			
Within Groups					
Total					

There are significant differences statistically between the two groups after analyzing the degree of implantation panoramic radiographs of the teeth in the maxilla and mandible in the frontal and lateral area

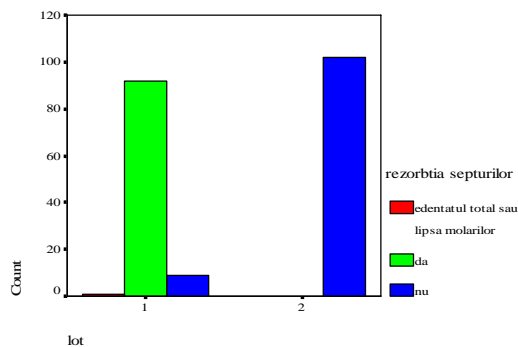
On radiographs, I noticed the resorption interradiculare septa and noted this data sheet pluriradicular patients who had dental units at the time of examination. Data are presented in table no. 7 and figure no. 2

Table no. 7. Statistics on the average degree of resorption of septa interradiculare

Crosstab					
		rezorbtia septurilor interradiculare			
		edentatul total sau lipsa molarilor	da	nu	Total
lot 1	Count	1	92	9	102
	% within lot	1.0%	90.2%	8.8%	100.0%
	% within rezorbtia septurilor interradiculare	100.0%	100.0%	8.1%	50.0%
	% of Total	.5%	45.1%	4.4%	50.0%
lot 2	Count			102	102
	% within lot			100.0%	100.0%
	% within rezorbtia septurilor interradiculare			91.9%	50.0%
	% of Total			50.0%	50.0%
Total	Count	1	92	111	204
	% within lot	.5%	45.1%	54.4%	100.0%
	% within rezorbtia septurilor interradiculare	100.0%	100.0%	100.0%	100.0%
	% of Total	.5%	45.1%	54.4%	100.0%

P=0.000

Figure no. 2. Illustration of the degree of resorption of septa interradicular



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The analysis of table 7 and figure no. 2 shows that: the panoramic radiographs have noticed that the majority of patients in group 1 (the investigation) was present in 90.2% interdicular septa resorption compared with patients in group 2 (controls) who did not have these rezorbții with majority of 54.4%.

CONCLUSIONS

1. There are significant differences statistically between radiographic detail pursued imaging examination compared between the two groups studie
2. In patients exposed to occupational hazards jaw bone thickness and mandibular bone is statistically lower than in patients not exposed to these pollutant
3. Degree of implantation of dental units at the front or side of both arches of patients in the investigational group is significantly lower than the level of tooth implantation in patients from the control grou
4. Resorption of septa interradiculare is higher statistically in patients who have prolonged exposure to occupational hazards compared with patients not exposed to hazard
5. Oral health can be influenced by occupational hazards that affect structures for maintaining dental units, which is relevant to many changes in their imaging exam on panoramic radiographs.

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