ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA
VOL. LXII, N 1, 34 SECTIO D 2007

Dental Surgery Department, Department of Histology and Embryology
with Lab of Experimental Cytology, Medical University of Lublin

URSZULA ORZĘDAŁA-KOSZEL, ANNA M. SZYSZKOWSKA,
PAWEŁ ZAŁĘSKI, WŁODZIMIERZ MATYSIAK

Dental inflammatory processes as a potential infection focus in the examined population

Apart from their local damaging effects, dental inflammatory processes also influence general health state (2, 3, 4, 11). Numerous studies are conducted on the mechanisms of infection foci effects on human organism, and their role in etiopathogenesis of other diseases. In the light of contemporary science, at the foundations of many diseases there are immunological mechanisms based on the formation of soluble antigen-antibody complexes (5, 9, 11). The most common diseases of that kind include: acute and chronic renal glomerule diseases, nephrotic syndromes, some vascular haemorrhagic diathesis and *diathesis thrombocytopenica*, inflammation of the cardiac muscle, rheumatic disease, rheumatoid arthritis, ankylosing spondylitis. Immunological processes occurring in those diseases are initiated by antigens and bacterial toxins released from an infection focus or haptens – antigens formed from decomposed tissues of the organism (2, 10, 11). The majority of clinical scientific publications most often mention dental inflammatory foci to be the cause of focal diseases. The incidence of such inflammatory lesions ranges from 69.9 to 91.0 per cent (2, 11). Despite the occurrence of numerous chronic primary foci (encapsulated by granulation and connective tissues) the incidence of focal diseases with an extensive clinical picture is relatively low since, in most cases, the focus activity and immune response of the organism are balanced.

Dental infections originating from teeth with gangrenous pulp, periapical granulomas, suppurated dental cysts, paradontitis, inflammatory foci in the area of unerupted teeth, left over after root extractions, are the most frequent cause of soft tissue and bone inflammations in the area of the facial part of the skull. Most inflammations of periapical tissues are asymptomatic.

The aim of the study was to determine the frequency of occurrence of various types of dental inflammatory foci among the patients of the examined population.

MATERIAL AND METHODS

The study was conducted on 56 patients from the dental surgery outpatients' clinic. In the examined group there were 33 men and 23 women. The average age of the patients was 50 years. The dental examination was conducted in artificial light, by means of a mouth mirror and a probe. Tooth pulp vitality was determined by examining its reactions to thermic stimuli, electric current, and diagnostic drilling of the tooth was performed when necessary. The periodontium was examined by percussion and pressure tests. For diagnostic purposes panoramic tomography scanning of the facial skeleton was done in all the examined patients, and intraoral x-rays of individual teeth in some of

them. On the basis of clinical examination and roentgenogram analysis the number and kind of dental inflammatory foci were determined. In the examined group five features were identified. Those features included: the number of dead teeth never treated with root canal therapy, the number of granulomas, the number of cysts, the number of teeth with adequately filled root canals, the number of teeth with inadequately filled root canals. When investigating the relationships between particular parameters Kenddall's tau correlation coefficient and Z-value were calculated. The calculations were made using the programme Statistica on IBM PC. The results of statistical analysis were presented in tables and figures.

RESULTS

Table 1 shows the qualification of dental inflammatory processes based on clinical and radiological examinations.

Table 1. The number of patients with particular types of dental inflammatory processes, divided acc. to sex

Type of lesion	Women		Men		Total	
	number	%	number	%	number	%
Teeth with dead pulp not treated endodontically	15	75.0	26	86.7	41	82.0
Granulomas	14	70.0	19	63.3	33	66.0
Cysts	3	15.0	9	30.0	12	24.0
Teeth adequately filled endodontically	14	70.0	9	30.0	23	46.0
Teeth inadequately filled endodontically	12	60.0	9	30.0	21	42.0
Number of examined patients	20		30		50	

The percentages of patients with particular types of chronic dental inflammatory processes are shown in Figures 1–5.

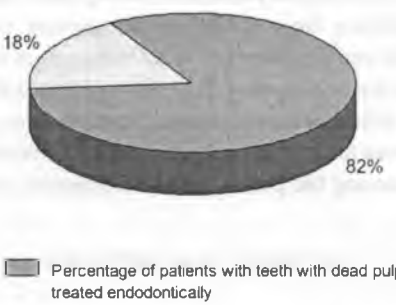

Fig. 1

In the examined population, teeth with dead pulp not treated endodontically were clinically diagnosed in 82% of the patients. Radiological examination revealed the presence of periapical granulomas in 66% of the patients, and dental cysts in 24%.

In the examined group 42% of the patients diagnosed with chronic dental inflammatory processes had the teeth which had been inadequately filled endodontically, however, in 46% the endodontically treated teeth had been filled adequately.

Fig. 2

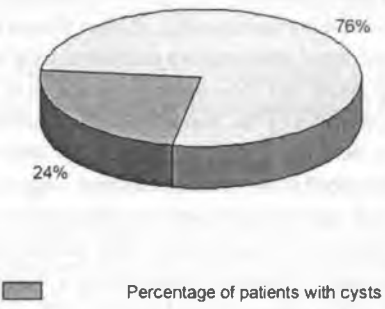

Fig. 3

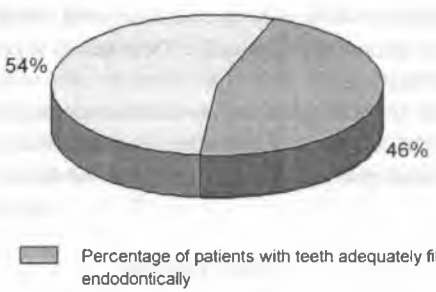

Fig. 4

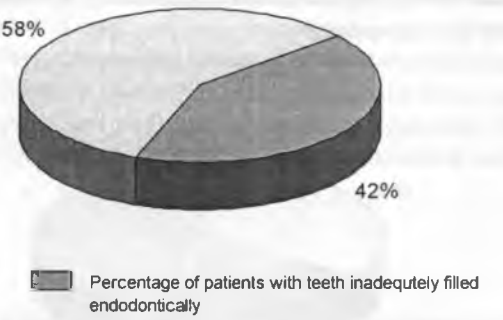

Fig. 5

DISCUSSION

Dental inflammatory processes still constitute a serious problem in the diagnostics and therapy of many systemic diseases since, apart from local effects, they can have an adverse impact on health balance (2, 3, 4, 11). Apart from numerous studies, the mechanisms of infection foci effects on human organism and their role in the etiopathogenesis of other diseases have not yet been thoroughly investigated (2). The influence of dental inflammatory processes on the blood image and the correlation between changes in blood cell count and the number of causal teeth were observed. The intensity of immune response inducing depends on the number of inflammatory foci (2, 4). In the scientific literature there are reports on the relationship between dental infection and the development of endocarditis. Recent studies described in the medical literature suggest the existence of relationships between dental infections of little intensity and cardiovascular system diseases (1, 6, 7, 8).

The study showed the presence of local lesions which can be characterized as chronic dental inflammatory processes, and constituted potential infectious foci. Radiological examination revealed periapical granulomas in 66% of the patients, dental cysts in 24%, implying long-term local dental inflammatory processes. Teeth with dead pulp not treated endodontically were detected in as many as 82% of the patients, which proves the lack of consciousness concerning the local and systemic effects among the patients.

In the examined population 42% patients had their teeth adequately filled endodontically, however, in 46% root canal therapy was inadequate. These results suggest careless approach or lack of professional skills of some dentists.

Chronic inflammations of periapical tissues are usually the consequence of acute inflammations or their course is chronic. The course of chronic inflammations is most often long and asymptomatic. The disease is diagnosed as a result of casual x-rays or when the disease becomes acute and specific symptoms appear.

CONCLUSIONS

1. Dental inflammatory foci constitute a serious diagnostic and therapeutic problem.
2. Excessive confidence in antibiotics, patients' reluctance about and doctors' inconsistency in removing such foci make them remain in the oral cavity for many years and have distant, adverse effects on the organism. Detection of such foci usually happens by coincidence.

REFERENCES

1. D'Aiuto F. et al.: Periodontal disease and C-reactive protein – associated cardiovascular risk. J. Periodontal Res., 236, 39, 2004.
2. Dreszer-Wasielicka B. et al.: Czas. Stomat., 388, 39, 1986.
3. Ebersole J. L. et al.: Inflammatory mediators and immunoglobulins in GCF from healthy, gingivitis and periodontitis sites. J. Periodontal Res., 543, 28, 1992.
4. Janicha J.: Obraz krwi w przewlekłych zapaleniach tkanek okołowierzchołkowych zębów mlecznych u dzieci. Czas. Stomat., 21, 36, 1983.
5. Jansen H. J. et al.: The importance of immunoglobulin – breakdown supporting the growth of bacteria in oral abscesses. J. Clin. Periodontol., 717, 23, 1996.
6. Joshipura K. J. et al.: Possible explanation for the tooth loss and cardiovascular disease relationship. Ann. Periodontol., 175, 3, 1998.
7. Joshipura K. J. et al.: Poor oral health and cardiovascular disease. UNC Sunstar Symposium "Periodontal Disease and Human Health", 58, 1997.
8. Joshipura K. J. et al.: Periodontal disease and biomarkers related to cardiovascular disease. J. Dent. Res., 151, 83, 2004.
9. Pulver W. H. et al.: Immune components in normal and inflamed human dental pulps. Arch. Oral. Biol., 103, 22, 1977.
10. Schenkein H. A., Genco R. J.: Gingival fluid and serum in periodontal diseases. J. Periodontol., 772, 48, 1977.
11. Szajner-Milart I., Majewski M.: Zakażenie ogniskowe i ich rola w patogenezie chorób wieku dziecięcego w świetle własnych obserwacji klinicznych. 52, 1, 1993.

SUMMARY

A study was conducted in order to determine the incidence of dental inflammatory foci in the examined population. Teeth with dead pulp not treated endodontically were present in 82% of the patients. Granulomas were found in 66% of the patients, and cysts were detected in 24% of the patients. Forty-two per cent of the population had teeth which had been inadequately filled endodontically, and in 46% teeth treated endodontically had been filled adequately

Procesy zapalne zębów jako potencjalne ognisko infekcji w badanej populacji

Przeprowadzono badania w celu ustalenia skali występowania ognisk zapalnych zębów w badanej populacji. Zęby z martwą miazgą nieleczone endodontycznie występowały u 82% pacjentów. Ziarniniaki zaobserwowano u 66% pacjentów, zaś torbiele wykryto u 24% pacjentów. U 42% populacji zęby były wypełnione w niewłaściwy sposób, zaś u 46% zęby leczone endodontycznie miały właściwie wykonane wypełnienia.