

Clinical and Statistical Study Regarding the Prevalence of Odonto-Periodontal Changes in Patients with Endocrine and Metabolic Diseases

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Abstract: Purpose of the study: The aim of our study is to evaluate the subjective-objective symptomatology of endocrinopathic patients with oro-dental changes as well as the clinical aspect of the disorder. Material and Method: The patients included in the study were selected from patients admitted to the Endocrinology Clinic Hospital no. 1 Craiova, 2012-2016. The results of the statistical study are eloquent for the chosen theme. Conclusions: The modifications of oro-dental sistem are sometimes suggestive for the diagnosis of an endocrine disorder.

Key words: endocrine diseases, odontal modifications, periodontal modifications.

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I. Introduction:

The endocrine glands influence the whole set of elements that make up the oro-dental cavity: hard tissues (bones and teeth) and soft tissues (lips, tongue, gums). The important changes of the facial massif, from the embryo to adolescent, the particular differentiation of some specialty organs, the existence of different genes for the development of each of these elements, make the endocrine secretion disorders, integrated in the adjustment system, manifest early and sometimes characterized by dento-maxillary abnormalities, bone or dental structural injuries, and various soft-tissue disorders¹².

The Aim Of The Study

The purpose of our study is to evaluate the subjective-objective symptomatology of endocrinopathic patients with oro-dental modifications as well as the clinical picture of the disorder.

II. Material And Method

The patients included in the study were selected from patients hospitalized in the Endocrinology Clinic Hospital no. 1 Craiova, 2012-2016. The group is represented of 12 patients - women, men and children - with endocrine disorders that also exhibited oro-dental modifications. The group is formed of 2 patients with age <17 years and 10 patients with age between 26-72 years. To be included in the study, patients were asked for informed consent.

In order to establish the endocrine diagnosis, were used both clinical criteria (anamnesis, objective and subjective examination) as well as paraclinical investigations (common biochemical, static / dynamic and imaging hormones). The extra and intraoral clinical examination provided details for endocrine-induced orodontal changes. It involved inspection and palpation of the lips, mucosa of the anterior buccal vestibule, jugular mucosa, tongue, mouth, palate, tonsils, and oropharynx. References between the floors of the face as well as the lip level were highlighted.

III. Results Of The Statistical Study

The analysis of the 12 patients diagnosed with endocrine diseases with orodontal modifications showed the following results (chart 1):

Distribution by age group was the following:

In the group of patients with age between 5 - 20 years we had 2 patients. Patients with age between 20-40 years were 3 patients. In the group of patients with age between 40-60 we had a group of 5 patients. In the group of patients aged between 60-72 years there were 2 patients.

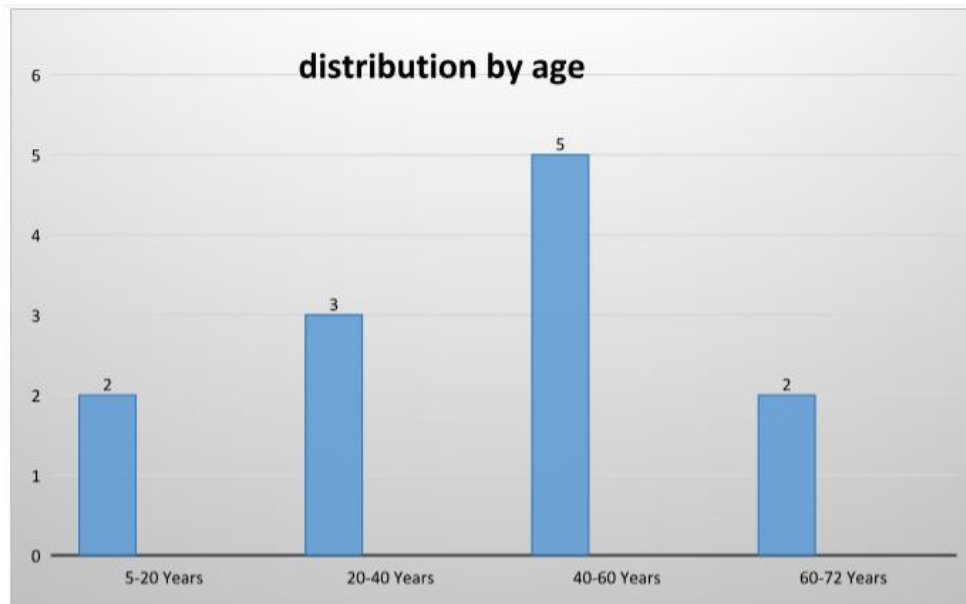


Chart 1

Distribution by sex: the analysis of the group structure showed the prevalence of female patients (66.6% female cases), 33.3% male cases (chart 2). Regarding the origin environment the study revealed that 7 patients live in the rural area and 5 patients live in urban (chart 3).

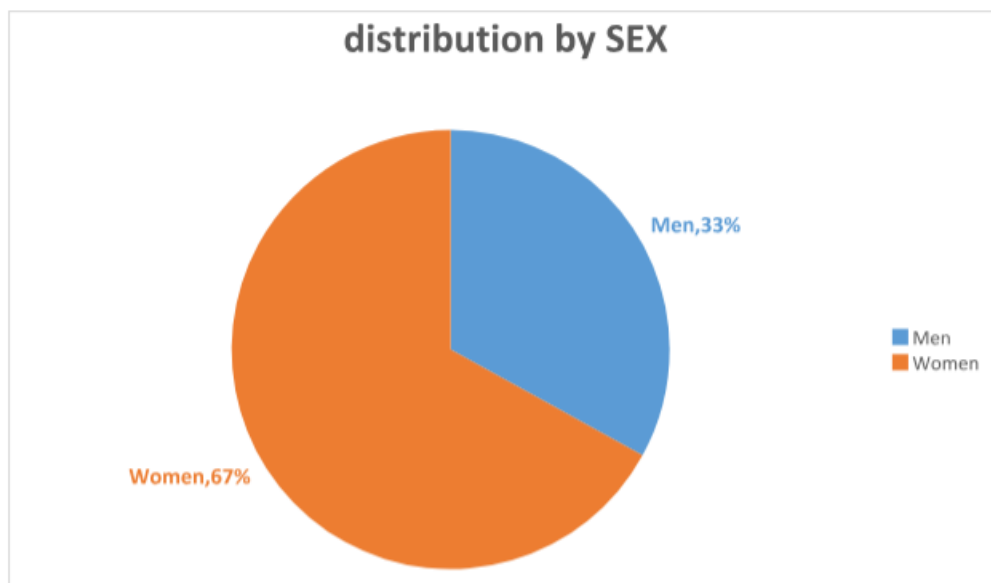


Chart 2

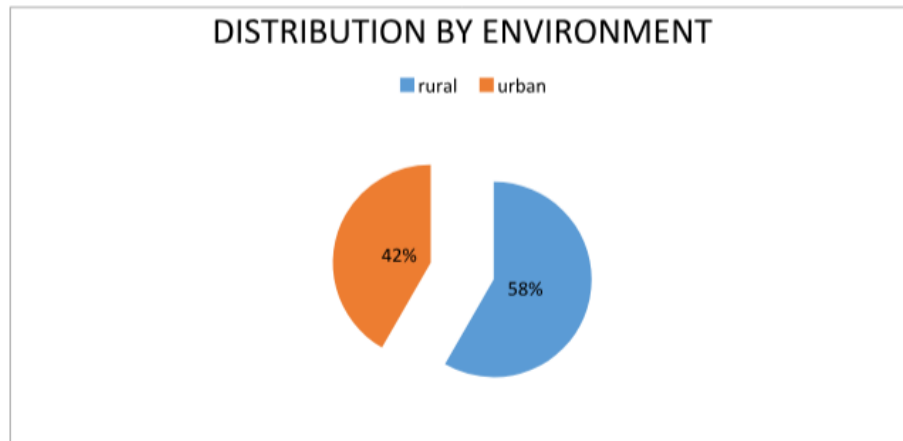


Chart 3

The prevalent of rural patients versus those in the urban environment may indicate problems of:

- poor health education especially in rural areas;
- material deficiencies;

Distribution of carbohydrate metabolism changes in endocrinopathic patients (chart 4):

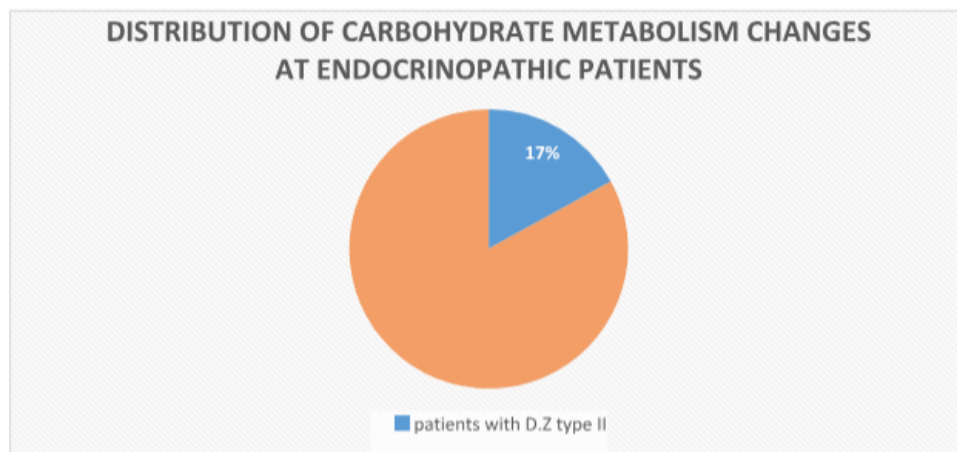


Chart 4

The main clinical manifestations present at patients with hormone diseases studied are: dyslipidemia, diabetes mellitus, ischemic cardiopathy, HTA, F.A.

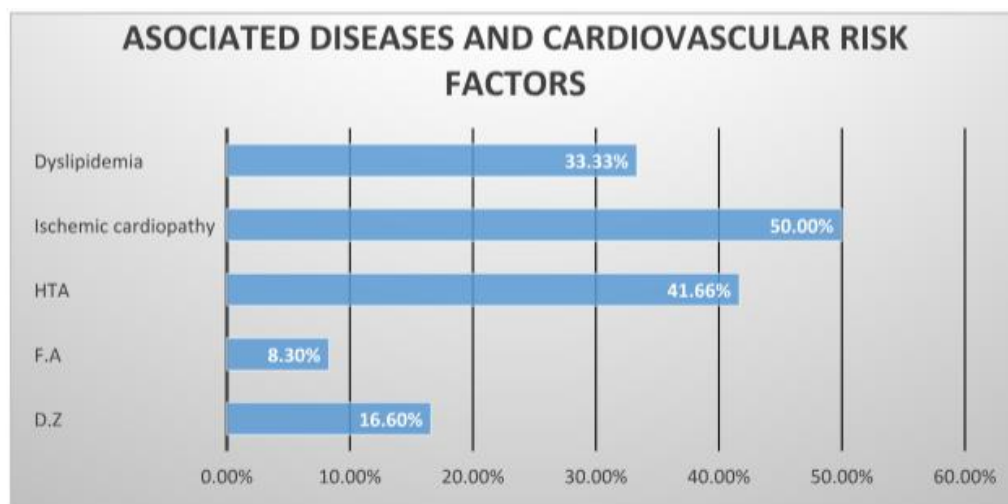


Chart 5

Distribution of Ca-Mg-P axis changes Of the patients studied, 4 patients (33.40%) had calcium values within normal range and 8 patients (66.6%) had low calcium levels. Magnesium values were within 50% of the normal values, 50% had low values. As far as phosphorus values are concerned, 5 cases showed normal values (41.66), and in 7 cases (58.3%) the values were low (chart 6).

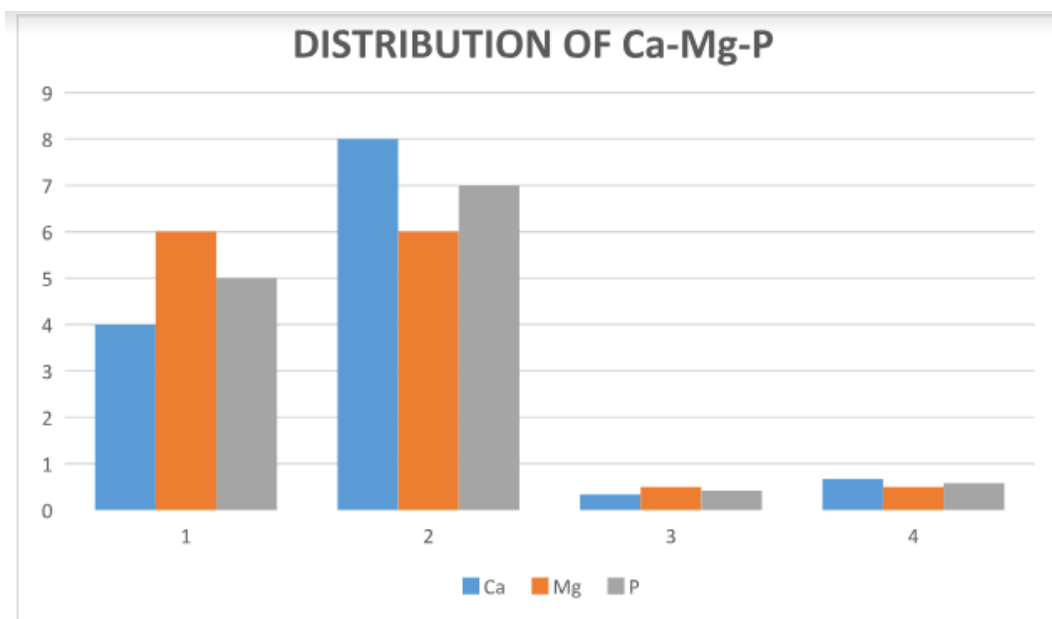


CHART 6

IV. Discussions

Dental modifications are multiple, focusing on volume, implantation, strength, and trophicity. The small volume of the teeth (microdontion) is characteristic for the pituitary dwarfism and we note that it is in harmony with the generalized microsomia, as evidenced by other specialized studies¹⁰. The oral cavity is totally small, but between the bones of the face, the most affected element is mandibula - mandibular retrognathism.

Vicious teeth implantation (dental malposition) has been noted in both pituitary dwarfism and Turner syndrome. Due to the incomplete development of the jaw and the mandible, the teeth remain normal, but dental fillings occur, as mentioned in other specialized studies^{15,16}. The association of various endocrine diseases with diabetes induced periodontal changes, influencing their evolution^{11,14}. These would be explained by:

- changes the response of the marginal periodontium to various local irritants, leading ultimately to bone resorption, gingival retraction and gum healing delays^{11,3}
- Gingival fluid contains more glucose, being a supportive microbacterial multiplication medium¹³;
- a fulminant periodontitis may also occur with frequent episodes of gingival abscess⁷;
- xerostomia⁷;

Recent research suggests that at patients with hypogonadism, the following clinical signs can be observed: low salivary flow, dental caries, unpleasant metallic taste, oral candidiasis, gingival tissue atrophy, higher platelet build-up, increased risk of gingivitis and fast resorption of the edentated crest, changes recorded by us¹.

Gum alterations have been noticed at both adult mixedem and acromegaly cases. In acromegaly, hypertrophic gingival is explained by the general process of hyperplasia and soft hypertrophic tissues. They appear crooked, like a sponge around the package, blooming in the new interdental spaces¹.

In mixedem, the gums are thick, pale and swollen, impression due to mucous edema that infiltrates them⁸.

Macroglossia, both in acromegaly and mixedem, induce by limiting movements, disturbances in words articulation, mastication, food bowl formation and swallowing⁸.

Lip changes are also present at pituitary (acromegaly) and mixedem pathology. In acromegaly, the lips become thick, sometimes fleshy, with well-defined and thickened edges (macrochilias)⁸.

In hypothyroidism, red lips are large and thick, and the color becomes pale or cyanotics⁸.

At hypothyroidism patients, odontal treatments do not pose problems, instead, we must take care of extractions because patients take substitutes for thyroid hormones, which increases tension and peripheral circulation⁹. To this is added the fact that patients also have cardiovascular changes⁶.

Hyperthyroidism also imposes restrictions on dental treatment due to tachycardia, irregular pulse and hypertension⁵.

Particular attention is paid to patients with hypothyroidism because they are lethargic and can swallow dental materials or have respiratory problems ².

The presence of intraoral infection, the administration of central nervous system depression or surgical procedures may speed up the installation of comorbid coma. Comorbid coma includes: hypothermia, bradycardia, severe hypotension and epileptic seizures. If the patient enters a coma, dental treatment stops and call for emergency ⁴.

V. Conclusions

1. The presence of oral manifestations at diabetic patients indicates inadequate glycemic control, therefore patients require special attention to detect long-term complications.
2. Modifications in the oro-dental system are sometimes suggestive for the diagnosis of an endocrine disorder.
3. In case of suspicion of an endocrine disorder in an undiagnosed patient, all dental work will be delayed until the endocrine status is assessed, requiring a collaboration between dentist and endocrinologist.
4. A patient with well-established endocrine diseases has no contraindications for dental treatment.

Contribution Note

All the authors equally contributed to the drawing up of the present paper.

References:

- [1]. Anil Govindrao Ghom. Endocrine Disorders. Text Book of Oral Medicine. 2nd ed. New Delhi: Jaypee publishers; 2013.p.874-91;
- [2]. Johnson AB, Webber J, Mansell P, Gallan I, Allison SP, Macdonald I. Cardiovascular and metabolic responses to adrenaline infusion in patients with short-term hypothyroidism. Clin Endocrinol 1995;43(6):747-51;
- [3]. Lalit Shrimali, Madhusudan Astekar, Sowmya GV. Correlation of Oral Manifestations in Controlled and Uncontrolled Diabetes Mellitus. International Journal of Oral & Maxillofacial Pathology 2011; 2:24-27;
- [4]. Little JW. Thyroid disorders. Part II: hypothyroidism and thyroiditis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2006; 102(2): 148-53;
- [5]. Malmed SF. Thyroid gland dysfunction in medical emergencies in the dental office. 5th ed. St. Louis: Mosby; 2000; 275-86;
- [6]. Muzyke BC. Atrial fibrillation and its relationship to dental care. JADA 1999; 130: 1080-85;
- [7]. Neville, Damm, Allen, Bouquot. Oral Manifestations of Systematic Diseases. Oral and Maxillofacial Pathology. 3rd ed. New Delhi: Elsevier publishers; 2013.p.830-46.);
- [8]. Pinto A, Glick M. Management of patients with thyroid disease: oral health considerations. J Am Dent Assoc. 2002; 133(7): 948-58;
- [9]. Poumpros E, Loberg E, Engstrom C. Thyroid function and root resorption. Angle Orthod 1994; 64: 389-94;
- [10]. Sanjay Kalra, Dinesh Dhanwal, Vaman Khadilkar. Hypopituitarism in the tropics. Indian J Endocr Metab 2011; 15: S151-3;
- [11]. Sarita Bajaj, Suresh Prasad, Arvind Gupta, Vijay Bahadur Singh. Oral manifestations in type-2 diabetes and related complications. Indian J Endoc Metab 2012; 16: 777-9.;
- [12]. Shaffer H.L, editor. A Textbook of Oral Pathology. Fourth Edition. Philadelphia: W.B Saunders Company; 1983. p. 654-56;
- [13]. Straka M. Oral manifestations of diabetes mellitus and influences of periodontological treatment on diabetes mellitus. Bratisl Lek 2011; 112:416-20;
- [14]. Venkataraman B K, Endocrine Disorders. Diagnostic Oral Medicine, 1st ed. New Delhi: Wolters Kluwer; 2013.p.-721-39;
- [15]. Vishal Gupta. Hypopituitarism in the tropics. Indian J Endocr Metab 2011; 15: S151-3;
- [16]. Vishal Gupta. Adult growth hormone deficiency. Indian J Endoc Metab 2011; 15: S197- 202;

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