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PERIODONTAL PATHOLOGY IN PUBERTAL GIRLS WITH HORMONAL IMBALANCES

Ciobanu Diana-Victoria, student, Faculty of stomatology, „Nicolae Testemițanu" SUMPh
Spinei Iurie, PhD, assoc. prof., Department of pediatric dentistry „Ion Lupan", „Nicolae Testemițanu" SUMPh

Introduction. The functional status of the organism during puberty significantly influences periodontal health. Systemic factors, particularly hormonal imbalances, play an essential role in the initiation and progression of periodontal pathology during this developmental stage. Sex hormones (estradiol, progesterone) and prolactin modulate gingival metabolism and the local immune response, while their fluctuations increase the inflammatory susceptibility of periodontal tissues.
Obective of the study. The aim of the study was to analyze the particularities of periodontal pathology in pubertal girls with gynecological diseases and hormonal disturbances.
Material and methods. The present research represents a controlled clinical study conducted at the Department of Pediatric Dentistry "Ion Lupan". Between 2025, 38 patients were selected from the Pediatric Gynecology Department of the IMSP "Institute of Mother and Child,". The subjects were divided into two groups: Group A – patients with gynecological disorders, hormonal alterations, and clinical signs of periodontal disease; Group B – patients without clinical signs of periodontal disease.
The research methods applied included bibliographic analysis, statistical evaluation, documentary review, clinical and paraclinical investigations.
Results. The prevalence of periodontal pathology among the examined patients was 65,79%. Chronic catarrhal gingivitis was diagnosed in 88% of the patients, of which 60% presented the generalized form and 28% the localized form. Generalized chronic hypertrophic gingivitis was detected in 12% of the patients. Moderate forms of gingivitis were diagnosed most frequently (56%), followed by mild forms (36%) and severe forms (8%). The frequency of dental caries and dento-maxillary anomalies proved to be important factors in the etiology, pathogenesis and clinical progression of inflammatory periodontal processes.
Conclusions. The study revealed a correlation between marginal periodontal pathology and hormonal fluctuations, with a predominant involvement of progesterone. The management of periodontal pathology in patients with pediatric gynecological disorders associated with hormonal imbalance requires a complex

approach, which primarily involves the stabilization of hormonal status, treatment of the underlying gynecological condition, elimination of local etiological factors, local anti-inflammatory therapy, orthodontic management, and other adjunctive therapeutic measures.
Keywords: Periodontal pathology; girls with hormonal disorders; puberty.

Introduction

Hormones such as estradiol, prolactin, and progesterone influence gingival metabolic status and the local immune response [9]. Their fluctuations may lead to incrased inflammatory vulnerability of the periodontal supporting tissues. Systemic conditions, particularly endocrine disorders, may further intensify this process by creating a favorable environment for the progression of periodontal pathology. In this context, understanding the relationship between gynecological pathology and hormonal imbalance becomes essential for the prevention and management of periodontal diseases during puberty and adolescence, a factor often overlooked in the study of the stomatognathic system.

The increase in sex hormone levels during puberty acts as a contributing factor in the development of gingivitis and periodontitis by promoting the proliferation of age-specific bacterial species. Consequently, gingival and periodontal inflammatory conditions are more frequently observed during puberty compared to the prepubertal stage.

Hormone-influenced gingivitis is particularly sensitive to hormonal changes and tends to regress during the circumpubertal phase (15). During puberty, increased bacterial colonization within the gingival sulcus capable of selectively accumulating estradiol, prolactin, and progesterone. Strict oral hygiene practices, including regular tooth brushing, dental floss use, and periodic dental examinations play a critical role in preventing periodontal inflammatory changes (2, 21).

Objective of the study: To analyze the particularities of periodontal pathology in pubertal girls with gynecological diseases and hormonal disorders.

Material and methods

This research represents a controlled clinical study conducted at the Department of Pediatric Dentistry ‘Ion Lupan’. In 2025 38 patients were recruited from from the Pediatric Gynecology Department of the IMSP “Mother and Child Institute”.

The research methods used included: bibliographic analysis, statistical evaluation, documentary review (form no. 043/e), clinical and paraclinical investigations.

The inclusion criteria were: patients diagnosed with gynecological pathology associated with hormonal disorders, age between 10 and 18 years, and informed parental consent for clinical and paraclinical investigations and treatment procedures. The exclusion criteria were: patients with other systemic diseases, age below 10 or above 18 years, uncooperative patients, absence of informed parental consent, and known allergies to materials or medications used. The patients were aged between 11 and 17 years, with a mean age of 15 years.

According to place of residence, 16 patients (42,11%) were from Chișinău municipality, while 22 patients (57,89%) originated from rural areas. This findings indicate that associated pathologies were 15.78% more frequently observed among girls residing in rural environments.

Using clinical, paraclinical, and statistical research methods, the correlation between systemic pathology and periodontal disease was investigated. Laboratory investigations results for each individual patient was performed and compared with periodontal indices. The obtained results were distributed according to age, place of residence, systemic pathology, hormonal disturbances, periodontal status, Oral Hygiene Index–Simplified (OHI-S) (Green J.C., Vermilion J.K., 1964), Simplified Plaque Index (SPI), DMFT index (Decayed, Missing, and Filled Teeth), and the PMA index (Papillary-Marginal-Attached, Parma). Anamnestic data were collected, followed by clinical and paraclinical examinations, including orthopantomography (OPG).

The patients were diagnosed with one or more gynecological disorders. The studied pathologies included: acute salpingitis and oophoritis, follicular ovarian cyst; primary dysmenorrhea; acute post-hemorrhagic anemia; hyperprolactinemia, hirsutism; bicornuate uterus; hypothalamic disorders; autoimmune thyroiditis; and secondary amenorrhea.

Results

During data evaluation, the records of 38 patients were analyzed. The patients presented complaints and manifestations characteristic of gynecological disorders, as well as varying degrees of periodontal involvement.

Following the clinical examination, it was established that the prevalence of periodontal pathology was 65.79%. Subsequently, the patients were divided into two groups: Group A (n=25) – diagnosed with one or multiple gynecological disorders associated with hormonal alterations and presenting clinical signs of periodontal disease; and Group B (n=13) – without clinical signs of periodontal disease (Figure 1).

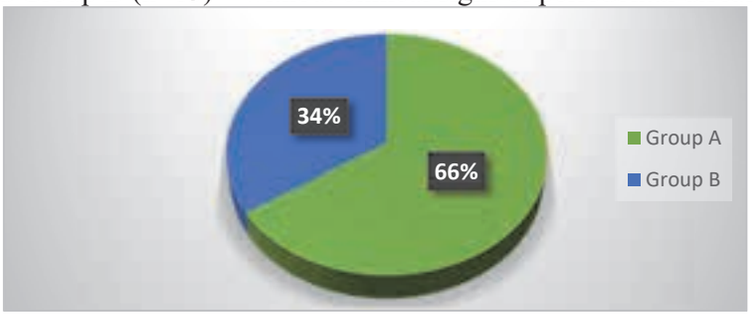

Figure 1. Distribution of patients according to study group

The diagnosis of chronic catarrhal gingivitis was established in 88% of patients, of which 60% presented the generalized form and 28% the localized form, while generalized chronic hypertrophic gingivitis was identified in 12% of patients (Figure 3).

Chronic catarrhal gingivitis was diagnosed in 88% of patients, of which 60% presented the generalized form and 28% the localized form, while generalized chronic hypertrophic gingivitis was identified in 12% of patients (Figure 2).

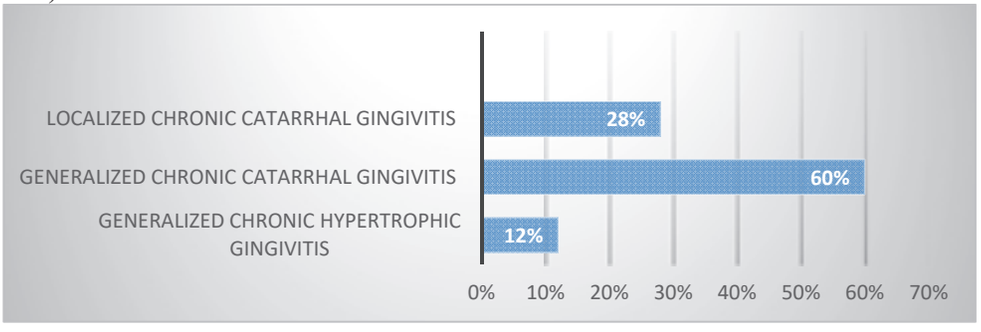

Figure 2. Prevalence of the clinical forms of periodontal pathology (%)

Moderate forms of gingivitis were most frequently diagnosed, accounting for 56% of the examined patients, followed by mild forms (36%) and severe forms (8%) (Figure 3).

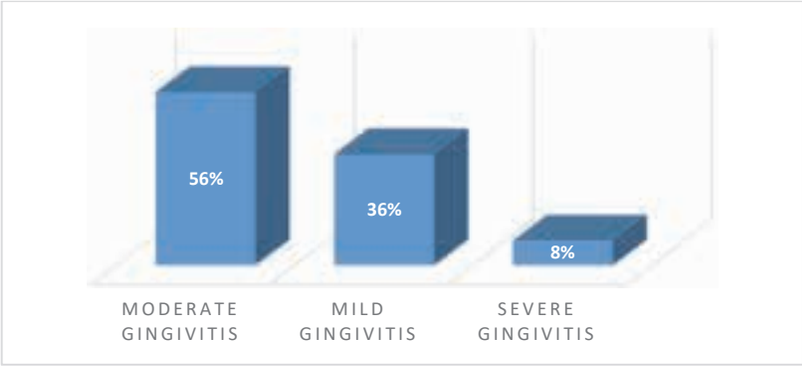

Figure 3. Distribution of patients according to the severity of gingival inflammation

The mean OHI-S score was 1,25, corresponding to a satisfactory level of oral hygiene. No statistically significant differences were identified between the oral hygiene indices of patients in Group A (OHI-S = 1,23) and Group B (OHI-S = 1,28).

The assessment of dental hygiene status using the Simplified Plaque Index (SPI; Silness and Löe) revealed an overall unsatisfactory level of oral hygiene (SPI = 1,68). However, in group A a poor level of oral hygiene was recorded (SPI = 2,15), while group B an unsatisfactory level was observed (SPI = 1,12) (Figure 4).

The difference in SPI values between group A and group B confirms that oral hygiene status represents a particulary important factor in the etiology, pathogenesis, and clinical progression of periodontal inflammatory processes in children (5, 8, 11, 19, 21).

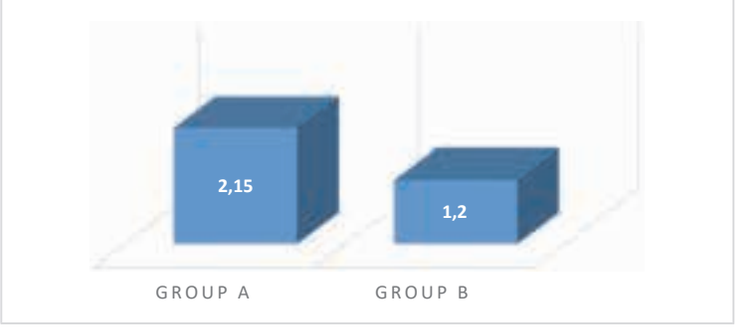

Figure 4. Mean SPI value

Dentomaxillary anomalies were identified in 28 children (73,68%), with a higher prevalence in Group A – 20 patients (52,63%), compared to Group B – 8 patients (21,05%).

The increased frequency of periodontal pathology among children presenting various forms of dentomaxillary anomalies is consistent with data reported in the scientific literature (1, 4, 5, 7, 10, 20), including studies conducted in the Republic of Moldova. The prevalence of periodontal diseases among subjects with dentomaxillary anomalies was reported to be high, accounting for 78,05% of examined individuals, of which catarrhal gingivitis constituted 76.6%, hypertrophic gingivitis 15,6%, and periodontitis 7,8% (Avornic L., 2009).

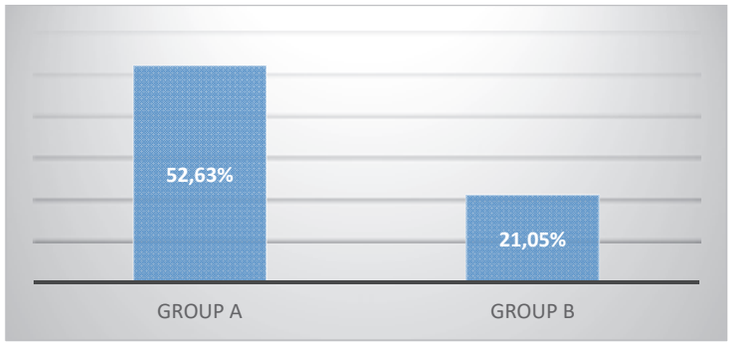

Figure 5. Prevalence of dentomaxillary anomalies according to study group

In Group A, the prevalence of dental caries was 100%, whereas in Group B it was 92.3% (Figure 6). The mean caries intensity index in Group A was DMFT = 3,96, which was 2.14 times higher compared to Group B (DMFT = 1,85).

The elevated levels of caries prevalence and intensity indices represent significant risk factors for periodontal pathology in pubertal children, as supported by findings reported in the literature (1, 7, 3, 5).

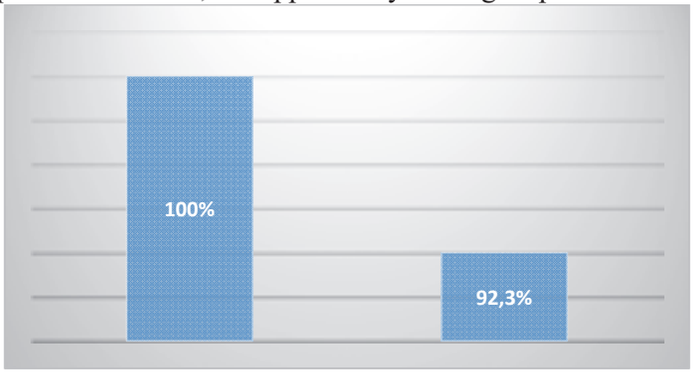

Figure 6. Prevalence of dental caries according to study group

It was determined that the mean OHI-S score among the 38 patients was 1,27, corresponding to a satisfactory level of oral hygiene. According to the Community Periodontal Index (CPI), the median value was 1,7, while the mean PMA index was 22,2%, consistent with mild gingivitis (Table 1).

Table 1. Levels of clinical indices (OHI-S, DMFT, PMA) and humonal parameters in patients

Nr	Diagnosis	Progesterone N(0,1-1) ng/mL	Estradiol N(1.2- 19.5) ng/ml	Prolactin N(4-23) ng/mL	OHI -S	COE	PMA
1	Generalized hypertrophic gingivitis	1.6 nmol/l	3.0 ng/ml	6,4 ng/ml	0,8	2	58,3%
2	Generalized chronic catarrhal gingivitis	0,90 nmol/l	5,3 pg/ml	19,1 ng/ml	1,6	6	27,2%
3	Generalized chronic catarrhal gingivitis	1.8 nmol/l	35.9 pg/ml	8,8 ng/ml	1,9	6	42,4%

4	Oral candidiasis, chronic catarrhal gingivitis	0,25 pg/ml	-	19,2 ng ml	2,1	4	20%
5	Generalized chronic catarrhal gingivitis	2.90 nmol/l	61.30 pg/ml	25,0 ng/ml	2,1	3	15,6%
6	Generalized chronic catarrhal gingivitis	1.8 nmol/l	24.5 pg/ml	27,1 ng/ml	0,3	1	38,1%
7	Generalized hypertrophic gingivitis	23.3 pg/ml	19.5	2,1 nmol/l;	1,7	7	64,4%
8	Generalized chronic catarrhal gingivitis	2.8 nmol/l	24.8 pg/ml	9,2 ng/ml	0,8	1	29,3%
9	Generalized chronic catarrhal gingivitis	3.1 nmol/l	34.7 pg/ml	29,5 ng/ml;	1,9	6	33,2%
10	Generalized hypertrophic gingivitis	-	-	29,4 ng/ml;	2,1	3	66,7%
11	Enamel hypoplasia,generalized chronic catarrhal gingivitis	-	78.0 pg/ml	12,5 ng/m	0,8	7	32,4%
12	Chronic catarrhal gingivitis	-	-	257,0 ng/ml	0,4	4	39,5%

An important aspect investigated in the study was the analysis of laboratory findings (Tables 1 and 2). Laboratory investigations of the patients included in the study were performed within the laboratory of the IMSP “Institute of Mother and Child”.

Laboratory data revealed that 27 patients presented with hyperprogesteronemia, 14 with hyperprolactinemia, 2 with hyperestrogenemia, and 10 with hypoestrogenemia (Table 2).

Table 2. Distribution of patients according to hormonal imbalances

Patient distribution groups / Hormonal imbalances	Group A	Group B
Patients with hyperprogesteronemia	18 children (72%)	9 children (69,23%)
Patients with hyperprolactinemia	8 cchildren (32%)	6 children (46,15%)
Patients with hyperestrogenemia	-	2 children (15,38%)
Pacienți cu hipoestroginemie	7 children (28%)	3 children (23,08%)

According to the underlying systemic pathology, the most frequently identified diagnosis in the Pediatric Gynecology Department among the girls included in the study was acute salpingitis and oophoritis, observed in 28 patients (73,68%), presenting with the most pronounced clinical manifestations and laboratory deviations.

The second most common condition was primary dysmenorrhea, diagnosed in 20 patients (52.63%), followed by follicular ovarian cyst (17,39%), acute post-hemorrhagic anemia (17,39%), hyperprolactinemia (17,39%), among others (Table 3).

Table 3. Distribution of patients according to underlying systemic pathology

Name of pathology	Group „A''	Group „B''
Acute salpingitis and oophoritis (73.91%)	68%	92,31%
Primary dysmenorrhea	44%	69,23%
Follicular ovarian cyst (17.39%)	28%	15,38%
Acute post-hemorrhagic anemia (17.39%)	17,39%	69,23%
Hyperprolactinemia (17.39%)	17,39%	15,38%
Hirsutism (8.69%)	8,69%	7,69%
Bicornuate uterus (4.35%)	4,35%	Absent
Hypothalamic disorders	Absent	15,38%
Autoimmune thyroiditis	Absent	7,69%
Secondary amenorrhea	Absent	15,38%

Taking into account the clinical manifestations of the patients gynecological pathology, it was established that imbalances in estradiol, prolactin, and progesterone levels may initiate and exacerbate alterations of the periodontal tissues. An asymptomatic course of periodontal disease was identified in 30,3% of patients, whereas 69,70% presented clinical pathological manifestations. Periodontal health and the body's capacity to respond to disease may be significantly influenced by hormonal dysregulation. Such changes are more frequently observed in females during specific life stages, including puberty, pregnancy, and menopause (2, 3, 40, 18).

Hyperprogesteronemia may exert a direct impact on gingival tissue integrity and contribute to the development of periodontal disease. Elevated progesterone levels may also promote an altered immune response to periodontopathogenic bacteria and induce shifts in the oral microbial balance, thereby favoring dental biofilm accumulation (16, 21, 29, 14, 13, 16, 20).

The relationship between prolactin and periodontal disease is multifactorial, primarily mediated through prolactin's effects on immune regulation and inflammatory responses. As an immunomodulatory hormone, prolactin may alter the host immune response to bacterial infections affecting the periodontal supporting tissues (5, 2, 12, 14, 13, 21).

Conclusions

1. The clinician must assume maximum responsibility in identifying the etiology of the pathology by thoroughly analyzing the patient's general medical history and applying all indicated diagnostic methods in order to establish an accurate diagnosis and ensure comprehensive rehabilitation, particularly during critical developmental periods.

2. Patients in both study groups presented various hormonal disturbances - isolated or multiple, combined, and of varying intensity and duration. In Group A, 72% of patients exhibited hyperprogesteronemia, 32% hyperprolactinemia, and 28% hypoestrogenemia. In Group B, 69,23% presented hyperprogesteronemia, 46,5% hyperprolactinemia, 23.08% hypoestrogenemia, and 15,38% hyperestrogenemia.

3. A detailed analysis of the described clinical cases highlights the role of hormonal balance in conditions such as acute salpingitis and oophoritis, as well as delayed puberty. In these cases, patients were diagnosed with moderate generalized chronic catarrhal gingivitis, all presenting age-related deviations in hormonal levels.

4. The prevalence of periodontal pathology among the examined children was 65,79%. Chronic catarrhal gingivitis was diagnosed in 88% of patients, of which 60% presented the generalized form and 28% the localized form, while generalized chronic hypertrophic gingivitis was diagnosed in 12%. Moderate forms of gingivitis were most frequently identified (56%), followed by mild forms (36%) and severe forms (8%).

5. Assessment of dental hygiene using the SPI index revealed an overall unsatisfactory level of oral hygiene (SPI = 1,68), particularly in Group A (SPI = 2,15 – poor hygiene), compared with Group B (SPI = 1,12 – unsatisfactory hygiene). The difference in SPI values between the two groups confirms that oral hygiene status represents an important factor in the etiology, pathogenesis, and clinical progression of periodontal inflammatory processes.

6. Dentomaxillary anomalies were identified in 73,68% of patients with pediatric gynecological disorders, with a higher prevalence in Group A (52,63%).

7. The overall prevalence of dental caries was 97,37%, with a mean DMFT index of 3,24, corresponding to a high level of caries prevalence and intensity according to WHO criteria (20). In Group A, caries prevalence was 100%, compared to 92,3% in Group B. The mean DMFT index in Group A was 3,96, which was 2.14 times higher than in Group B (DMFT = 1,85). Elevated caries prevalence and intensity represent significant risk factors for periodontal pathology in pubertal children.

8. Marginal periodontal pathology secondary to gynecological disorders may exhibit reduced clinical progression or even complete remission following appropriate hormonal therapy, however, strict monitoring is required. Management of periodontal disease in patients with pediatric gynecological disorders and hormonal imbalance requires a comprehensive approach, including hormonal stabilization, treatment of the underlying gynecological condition, elimination of local etiological factors, professional dental cleaning, oral sanitation, local anti-inflammatory therapy, and orthodontic treatment when indicated.

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