

# Comprehensive dental care in pediatric patients with hematological diseases

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## Abstract

**Introduction:** hematological disorders constitute one of the most interesting problems to be considered by the stomatologist in his daily practice.

**Objective:** to characterize the comprehensive stomatological care in patients with hematological diseases at the Provincial Pediatric Teaching Hospital "Pepe Portilla" in the period from September 2020 to September 2021.

**Methods:** An observational, descriptive, cross-sectional study was developed with the purpose of characterizing the comprehensive stomatological care in patients with hematological diseases at the "Pepe Portilla" Pediatric Provincial Teaching Hospital, from September 2020 to September 2021. The universe and the sample consisted of 21 patients, the sample was selected intentionally, according to the inclusion and exclusion criteria. The data were obtained from the clinical history of the patients. Descriptive and inferential statistical methods were used to describe the variables.

**Results:** patients aged between 7 and 12 years had a greater presence with 52,38 %. There was a greater presence of white patients with 42,86 %, with a greater predominance of the female sex. Conservative treatment was the most needed in 52,34 % of these patients. The use of pharmacological prophylaxis in 47,62 % of the cases, of which 28,57 % were destined to surgical type treatment.

**Conclusions:** Most of the patients examined presented poor oral hygiene. Pharmacological prophylaxis was the most used method prior to stomatological treatment. Supportive physiotherapy, analgesia and antimicrobial therapy were part of the treatment for all postsurgical complications.

**Keywords:** hematologic diseases; signs and symptoms; antimicrobial; patients

## Introduction

There are multiple clinical manifestations of hematologic diseases, so it is vital to identify these pathologies in order to diagnose and apply an adequate treatment that responds to the needs of the patient's disease through a correct anamnesis, clinical examination and complementary tests. These constitute a very diverse group of diseases whose classification depends on the affected component. <sup>(1)</sup>

These diseases affect 1,62 billion people in the world, which corresponds to 16,8 % of the world population. The highest incidence is found in the pediatric age group and the most affected group, according to sex, is female with 468 million, representing 29 % of the total number of people with hematological pathologies. <sup>(2)</sup>

There are many pathologies of this origin that occur in pediatric ages, but there is no solid worldwide registry that collects reliable statistics for real studies on the morbimortality of these diseases. Only some countries in America, Europe and Asia show an important effort for the statistical and medical control of these diseases. <sup>(2)</sup>

The timely identification of these signs through a thorough physical examination and complete medical history prevents complications in the patient that could put his life at risk, so that when any sign suggestive of a hematological disorder is found, the patient should be referred to the hematologist. The stomatologist should be able to identify the different

signs in the oral cavity that could suggest that the patient has a hematologic disorder, which could complicate dental treatment. <sup>(3)</sup>

Even with the knowledge of the specialist in hematology, the stomatologist should have full knowledge about these pathologies, their different clinical characteristics, oral manifestations, medical treatment of patients and the possible complications that may appear by performing minor surgical procedures, knowing in depth how to act in case of a complication and the medication that the patient has indicated. <sup>(4,5)</sup>

In the province of Pinar de Río, in the last two years, about 245 patients have been diagnosed, 36 of them have died, so it is a real health problem faced by the specialized personnel in these pathologies and the stomatologist, so it is urgent to evaluate the efficacy and safety of the implementation of the algorithm of intervention before these nosological entities favoring the evolution of the pediatric patient. <sup>(2)</sup>

The bibliography consulted allowed us to detect certain limitations in the subject. There are few studies worldwide that show a permanent follow-up of these pathologies and their epidemiological behavior by the different health systems. In addition, there is a gap between the theory proposed decades ago and the present time, and there is a need to update everything related to the ideal management protocols for pediatric patients with pathologies of this nature.

In spite of having protocols for the stomatological care of patients with hematological disorders, there is an urgent need to give them greater importance, update them and bring them up to date with the new studies in the field of hematology, giving greater importance to preventive work and thus guaranteeing a lower number of complications before, during and after dental treatment.

Due to the importance of evaluating all these particularities in the hospital context, this research is carried out with the objective of characterizing the comprehensive stomatological care in patients with hematological diseases in the Provincial Pediatric Teaching Hospital "Pepe Portilla", in the period from September 2020 to September 2021.

## Methods

An observational, descriptive, cross-sectional study was carried out with the purpose of characterizing the comprehensive stomatological care in patients with hematological diseases at the "Pepe Portilla" Pediatric Provincial Teaching Hospital from September 2020 to September 2021.

The universe was integrated by the totality of patients who attended the Oncohematology Service during the period established for the research. A total of 21 patients, whose ages ranged from 1 to 18 years old. The sample was selected intentionally and was constituted according to the inclusion and exclusion criteria.

## Inclusion criteria

Patients with previously diagnosed hematologic pathologies.

Patients whose parents signed the informed consent form

## Exclusion criteria

Patients under study, without a definitive diagnosis of their basic pathology.

Patients with a general health condition that prevents them from being examined and receiving conventional stomatological treatment.

The variables analyzed were: age, sex, race, health area, clinical manifestations, hematologic disease, lesion location, level of oral hygiene, required stomatological treatment, measures prior to stomatological treatment, post-surgical complications and emergency behavior to be followed.

The research was carried out under the dialectical materialistic approach as a general method of sciences. Based on it and for the development of scientific tasks, different theoretical, empirical and statistical methods of scientific research were combined.

From the theoretical level, the historical-logical one that allowed to deepen in the antecedents and in the current tendencies of the object that was investigated, when punctuating the current approaches of this object.

## Empirical:

Documentary analysis: to obtain information contained in governing documents (clinical records of hospitalized patients).

Statistics: Simple frequency distributions were obtained for all the variables included in the study. For a better understanding, these were presented in contingency tables, using absolute and relative frequency parameters. A bivariate analysis was performed to describe the behavior of some categorical variables and the Chi-square test was used to determine their statistical correlation. A significance level of  $p=0.05$  was determined and probability values associated with results lower than this were considered as significant.

The principles of medical ethics and the aspects established in the Declaration of Helsinki were complied with.

## Results

A predominance of the male sex was observed with 57,14 % of the sample. There was also a greater presence of patients between 7 and 12 years of age with 52,38 %, and a greater presence of white patients with 61,89 % (Table 1).

Age	Sex				Total		Skin color					
	Male		Female				White		Mestizo		Black	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1-6	2	9,52	2	9,52	4	19,04	2	9,52	1	4,76	1	4,76
7-12	6	28,57	5	23,81	11	52,38	6	28,57	3	14,28	2	9,52
13-18	4	19,05	2	9,52	6	28,57	4	19,04	1	4,76	1	4,76
<b>Total</b>	12	57,14	9	42,86	21	100	12	57,13	5	23,8	4	19,04

**Table 1:** Distribution of patients according to sex and race. "Pepe Portilla" Provincial Teaching Pediatric Hospital, September 2020 to September 2021.

It was evidenced that intraoral manifestations had a greater presence compared to extraoral manifestations in a proportion of 1.71. Anemias and erythrocyte disorders were the most frequent manifestations, both extraoral in 42,86 % and intraoral for 50 % respectively (Table 2).

Hematologic disease	Extraoral		Intraoral	
	No.	%	No.	%
Anemias and erythrocyte disorders	3	42,86	6	50
Defects of hemostasis	2	28,57	2	16,67
Hemolymphopoietic neoplasms	2	28,57	3	25
Other	0	0	1	8,33
<b>TOTAL</b>	<b>7</b>	<b>100</b>	<b>12</b>	<b>100</b>

**Table 2:** Distribution according to location of the lesions and the hematological disease diagnosed

It was found that 90,48 % of the patients presented poor oral hygiene, of which 66,67 % showed some type of clinical manifestation of their respective underlying disease in the stomatognathic apparatus. Of those without lesions, 23,81 % showed poor oral hygiene (Table 3).

Level of oral hygiene	Present		Do not present		TOTAL	
	No.	%	No.	%	No.	%
Efficient	1	4,76	1	4,76	2	9,52
Deficient	14	66,67	5	23,81	19	90,48

**Table 3:** Presence of clinical manifestations and the level of oral hygiene

Conservative treatment was the most needed in 52,34 % of these patients. This was followed by surgical treatment with 33,33 % and finally, preventive treatment in 3 patients considered healthy with risk from the epidemiological point of view (Table 4).

Type of treatment	Anemias and erythrocyte disorders		Hemostasis defects		Neoplasms Hemolymphopoietic		Others	
	No.	%	No.	%	No.	%	No.	%
Preventive	2	9,52	5	23,81	3	14,29	0	0
Surgical	0	0	2	9,52	1	4,76	1	4,76
Conservative	1	4,76	3	14,29	2	9,52	1	4,76
<b>TOTAL</b>	<b>3</b>	<b>14,29</b>	<b>11</b>	<b>52,38</b>	<b>7</b>	<b>33,33</b>	<b>2</b>	<b>9,52</b>

**Table 4:** Stomatological treatment required according to hematological disease

The use of pharmacological prophylaxis was observed in 47,62 % of the cases, of which 28,57 % were for surgical treatment. Many of the patients treated did not require prior measures (28,57 %) since they attended with all their hematological variables compensated and the treatments were relatively simple (Table 5).

Type of treatment	Anemias and erythrocyte disorders		Hemostasis defects		Neoplasms Hemolymphopoietic		Others	
	No.	%	No.	%	No.	%	No.	%
Preventive	2	9,52	1	4,76	0	0	0	0

<b>Surgical</b>	4	19,05	4	19,05	2	9,52	1	4,76
<b>Conservative</b>	0	0	6	28,57	1	4,76	0	0
<b>TOTAL</b>	6	28,57	10	47,62	4	19,05	1	4,76

**Table 5:** Preliminary measures according to the type of stomatological treatment required

The patients who attended immediately received analgesia and physiotherapy. Of these, three (75 %) required auxiliary hemostatic methods and two of these (50 %) required supportive antimicrobial therapy. Regarding complications after the first 24 hours, there was only one patient who could not be seen immediately for treatment.

## Discussion

Parra and Rodriguez<sup>(6)</sup> state that the most common clinical manifestations of anemia and erythrocyte disorders are pallor and atrophy of the mucous membranes, depapillated tongue, glossitis, angular cheilitis, oral candidiasis, delayed wound healing after oral surgery, ulcers, glossodynia and dysphagia. Regarding hemostasis defects, epistaxis, petechiae and ecchymosis in skin and mucous membranes are the most common. Spontaneous gingival hemorrhage is very frequent at intraoral level, causing brown deposits on the teeth due to hemosiderin and other waste products. Likewise, other disorders such as neutropenia cause premature tooth loss, recurrent deep and large ulcers that persist, covered by a whitish pseudomembrane surrounded by mild erythema. Periodontal involvement may present as gingivitis, periodontitis or stomatitis with ulceration.

Regarding these results, Haider (et al.)<sup>(7)</sup> indicate that hemostasis disorders related to thrombocytes are rarely observed in patients older than 50 years of age, although he does not report a marked prevalence in pediatric ages. Regarding hemostasis disorders, Medeiros(et al.)<sup>(8)</sup> found that Idiopathic Thrombotic Purpura (ITP) is a disease that occurs mostly in women of childbearing age, between 15 and 50 years of age, although it can also appear in men as in this case. Suquilanda<sup>(9)</sup> found that the average age was 56 years with a progressive increase after 60 years of age.

Shimizu(et al.)<sup>(10)</sup> report that in chronic myeloid leukemia signs such as angular cheilitis, purplish spots, lip flange papule, fibrous hyperplasia, inflammatory sublingual ulcer, hyperemic incisive papilla and multiple petechiae are present. Tangudu(et al.)<sup>(11)</sup> also indicate that in the case of chronic neutrophilic leukemia it is more frequent to observe oral manifestations such as reddening and bleeding of the gums, small ulcers that may or may not have pus, bad breath, septic focus, pallor of the mucous membranes, caries, periodontitis.

Antonini et al.<sup>(12)</sup> report that leukemia tends to present its first manifestations in the oral cavity, and the most frequent are gingival bleeding disorders, gingival hyperplasia, inflammation, oral ulcers and petechiae. The dentist is one of the first health professionals who can detect the signs and symptoms of leukemia. So you can order tests to confirm the suspicion of a possible alteration; this allows a quick and early diagnosis; which favors a better prognosis for patients.

In the multidisciplinary oncology team, the dentist contributes to the medical team before, during, and after the medical examination and treatment. Mojica Lobo (et al.)<sup>(13)</sup> indicate in their review on the most frequent oral manifestations in pediatric patients that, according to what is reported in the current literature, the most frequently diagnosed type of cancer in this age group was acute lymphoblastic leukemia (52,7 %) and non-Hodgkin's Lymphoma (14,9 %). There was a predominance of clinical manifestations such as mucositis in 22.1 %, followed by candidiasis in

14,1 %, herpes (7,7 %), sialorrhea (6,6 %), ulcers (6,2 %), xerostomia (6 %), mucosal hyperkeratosis (3,2 %) and sialoadenitis (2,5 %).

Less prevalent oral manifestations such as dental caries, trismus and geographic tongue were also found. Antiplatelet drugs and anticoagulants have been associated with increased bleeding time and increased risk of postoperative bleeding.<sup>(14)</sup> For this reason, some dentists still recommend stopping therapy with these drugs at least three days before the oral surgical procedure.

However, stopping the use of these drugs exposes the patient to vascular problems with possible significant morbidity.<sup>(15)</sup> Al-Mubarak et al.<sup>(16)</sup> maintain that dental extractions can be performed without altering warfarin treatment as long as the INR is equal to or less than 3.0 and effective local haemostasis can be achieved. Furthermore, in many cases, surgical suturing is not even necessary. Sindet-Pedersen et al.<sup>(17)</sup> recommend that gauze soaked in tranexamic acid be applied immediately after extraction, with local compression for a few minutes, followed by mouthwash every six hours for seven days.

Malden et al.<sup>(18)</sup> observe that the most observed postoperative failure in anticoagulated patients is the postoperative elevation of the INR. This increase appears to be related to multiple or surgical extractions. However, it is not related to sex, preoperative intake of antibiotics or simple procedures that most affected the probability of coagulation problems. For these authors, patients undergoing oral anticoagulation and requiring dental extractions constitute a common problem in dental practice; although most warfarin-related bleeding occurs when the INR is above 3.0.

It is concluded that male sex, ages between 7 and 12 years old and patients with white skin predominated. Most of them belonged to health areas corresponding to the municipal capital, and intraoral manifestations were more frequent, with anemia and erythrocyte disorders predominating.

Most of those studied presented poor oral hygiene. They coincided with at least one type of oral manifestation. The great majority required conservative treatment, followed by surgical treatment and finally preventive treatment. Pharmacological prophylaxis was the most commonly used method prior to stomatological treatment.

Many of the patients treated did not require previous measures, and supportive physiotherapy, analgesia and antimicrobial therapy were part of the treatment for all the post-surgical complications presented.

## Conflict of interest

The authors declare that there is no conflict of interest.

## Authors' contribution

All authors participated in the conceptualization, formal analysis, project management, writing - original draft, writing - revision, editing and approval of the final manuscript.

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