

## Evaluating periodontal conditions in patients with von Willebrand's disease in Hospital Universitario de Maracaibo (University Hospital, Maracaibo) -Venezuela

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### Abstract

**Objective:** To evaluate the periodontal conditions of patients with von Willebrand's Disease (vWD) who went for dental examination in the "Area of attention to patients with systemic disease" of the University Hospital in Maracaibo, Venezuela. **Design of the Study:** 40 patients (28 female and 12 male), with ages ranging from 10 to 72 years, who regularly attended dental control, were evaluated along with a control group of patients with no hemorrhagic alterations. Periodontal conditions were evaluated using the Löe and Silness Gingival Index (GI) and Greene and Vermillon's Simplified Oral Hygiene Index (SOHI). The results were analyzed using averages, Standard Deviation, Student's T-test and the Chi<sup>2</sup> test, with P<0.0005. **Results:** 92.5% of the patients had Type 1 vWD and 7.5% had Type 2 or 3. Periodontal Indices: GI (0.70±0.40, slight) and SOHI (1,70±0,80, acceptable). Comparison with the control group showed that there were statistically significant differences in the SOHI (P = 0.02). **Conclusions:** Periodontal conditions in patients with vWD regularly attending for dental control were within acceptable parameters. Education of the patient with regard to prevention and opportune treatment is of utmost importance, thereby avoiding the oral hemorrhagic complications produced by the periodontal disease. Of equal importance is multidisciplinary teamwork.

**Key words:** Von Willebrand's Disease, periodontal conditions, Gingival Index, Simplified Oral Hygiene Index, prevention.

### Introduction

Von Willebrand's disease is an autosomally transmitted hemorrhagic disorder in which there is a deficiency of the von Willebrand Factor (vWF) –a multimeric multifunctional molecule that allows plaque adhesion during the loss of vascular endothelium integrity while protecting the Factor VIII (antihemophilic) circulating in plasma from proteolysis. It is the most frequent congenital hemorrhagic disorder, with an estimated prevalence of 1% in the general population (1).

In the current classification of periodontal disease, the

types of periodontitis are described as the manifestation of a systemic disease. Among them, there are the ones associated with hematological disorders, such as hemorrhagic diseases caused by disorders in blood clotting and thrombocytopenic and non-thrombocytopenic purpura such as thromboasthenia, in which plaque dysfunction is produced. Although there is no evidence so far that these systemic conditions increase susceptibility to periodontal disease, they certainly affect dental management of the patient (2).

Moreover, hematologists and dentists know that most pa-

tients with coagulation disorders have multiple advanced deep-seated caries due to deficient oral hygiene caused by fear of bleeding while brushing their teeth (3), which contributes to the development of periodontal disease and gingivorrhagia in these patients (4). The objective of this study was to evaluate the gingival condition and the degree of oral hygiene of patients with vWD who attended the unit for patients with systemic disorders in Hospital Universitario de Maracaibo (HUM), Venezuela.

**Materials and Methods**

The patients under study came regularly to HUM from the Municipalities of San Francisco and Maracaibo, State of Zulia for dental examination. After obtaining their informed consent, 40 patients diagnosed with vWD were studied in accordance with standard methodology (5): 28 females (70%) and 12 males (30%), with ages ranging from 10 to 72 years; 55% were between 10 and 24 years of age, 17.5% between 25 and 39, and 5% between 40 and 70. Thirty-seven (37) patients had Type 1 vWD, two (2) had Type 2A and one (1) had Type 3. The control group comprised 27 patients with no personal or family history of hemorrhage. The Löe and Silness Gingival Index (GI) (6) and the Greene and Vermillon Simplified Oral Hygiene Index (SOHI) (7). Clinical values for GI were: Slight inflammation (0.1-1.0), moderate inflammation (1.1-2.0) and severe inflammation (2.1-3.0). Clinical values for SOHI were: Adequate

(0.0-1.2), Acceptable (1.3-3.0) and Deficient (3.1-6.0). The evaluation was carried out under artificial light, using a dental mirror, explorer and a periodontal probe. Teeth studied: 11, 16, 26, 31, 36, 46. Exclusion Criteria: the presence of fractured and partially erupted teeth. When one of the teeth chosen was absent, the highest value detected in the remaining teeth in the quadrant was chosen. The results were analyzed using Student's T-test and the Chi<sup>2</sup> Test at five percent significance level (P<0.05).

**Results**

Evaluation of the periodontal conditions of the population of patients with vWD (Table 1) showed that the values for SOHI and GI were within acceptable ranges (SOHI 1.7±0.8 and GI 0.7±0.4). When compared with the control group of patients with no hemorrhagic disorders, there was a statistically significant difference in SOHI (P=0.02), but not for GI (P=0.17). When the value resulting from the SOHI and GI indices of vWD patients with regard to gender was correlated, it was observed that there was better oral hygiene and less gingival inflammation in females (Female SOHI 1.7±0.7 and GI 0.6±0.4 vs. Male SOHI 1.9±1.1 and GI 0.8±0.5), although there was no significant statistical difference. Table 2 shows the type and degree of gingival inflammation in accordance with the variants of vWD. Slight

**Table 1.** Comparison of Gingival Inflammation (GI) and the Simplified Oral Hygiene Index (SOHI) in patients with von Willebrand's Disease and control group.

	von Willebrand's	Control Group	P
GI	0.70±0.40 n=40	0.88±0.68 N=27	P=0.17
SOHI	1.7±0.80 n=40	0.76±0.55 N=27	P=0.02

n: Represents the number of cases

**Table 2.** Degree of Gingival Inflammation (GI) and the Simplified Oral Hygiene Index (SOHI) according to the variants of von Willebrand's Disease.

EvW	Gingival Index			SOHI		
	No Inflammation n=1	Slight n=30	Moderate n=9	Adequate (0.0-1.2) n=15	Acceptable (1.3-3.0) n=23	Deficient (3.1-6.0) n=2
Type 1 N=37	1 (2.5%)	29(72.5%)	7(17.5%)	15(37.5%)	21(52.5%)	1(2.5%)
Type 2A N=2	0	1 (2.5%)	1 (2.5%)	0	1 (2.5%)	1 (2.5%)
Type 3 n=1	0	0	1 (2.5%)	0	1(2.5%)	0

n: Represents the number of cases.

inflammation can be seen in 72.5% of patients with Type 1 vWD, moderate gingival inflammation in 17.5%, whereas there is slight and moderate inflammation in the 2 patients with Type 2A and the patients with Type 3 vWD, also without statistically significant differences.

It can be appreciated that there was adequate oral hygiene in 35% of the patients under study –all of Type 1 vWD. Correlation of GI and SOHI (adequate, acceptable, deficient) in patients with vWD did not reveal any statistically significant association between parameters.

## Discussion

It has been reported that oral hygiene in patients with congenital hemorrhagic diseases such as Hemophilia and vWD (8) is inadequate when compared with systemically healthy patients (8-11). One of the causes of the precarious oral conditions is explained by the patient's fear of hemorrhaging produced by tooth brushing (3). However, in the present research, the patients' SOHI was acceptable, probably as a result of regular attendance to dental examination, where preventative measures are applied, such as teaching patients brushing techniques for the control of bacterial plaque, the use of mouth washes and dental floss and the administration of opportune periodontal treatment carried out in the Dental Service at Hospital Universitario de Maracaibo (in the "Dental Attention Area for Patients with Systemic Disease"). This has all contributed favorably to this particular group of patients with hemorrhagic disorders, allowing them to attain favorable conditions of oral health.

The most recent data on oral health in the population of the United States is provided by the third "National Health and Nutrition Examination Survey" (NHANES III) carried out between 1988 and 1994. It is the seventh in a series of national surveys to improve estimations of the nation's state of health. This survey determined the presence of gingivitis through the "National Institute of Dental Research" (NIDR) protocol, which establishes the presence of gingivitis through hemorrhage of the gingiva. According to NANHES III, there was gingivitis in 63% of the civil population from 13 years on, due to the presence of hemorrhage in at least one place in the gingiva, being slightly more prevalent in adolescents (12).

The NIDR protocol is of very little use for determining the presence of gingivitis in this group of patients with hemorrhagic affections, since it only contemplates hemorrhage for detecting gingival inflammation. Therefore, another epidemiological index was chosen to determine said periodontal affection.

In this investigation, the population of patients with vWD was evaluated using the Löe and Silness GI (6). It not only contemplates spontaneous hemorrhage or hemorrhage by touching as an indicator of gingival inflammation (which is not very reliable in patients with hemorrhagic disorders) but also appraises change in gingiva color, the presence of

edemas and ulcerations, and classifies the disease as slight, moderate or grave, in accordance with each patient's score. The majority of our patients had slight gingival inflammation. This is the result of the application of the periodontal maintenance phase, which consists of reinforcing the control of the dentobacterial plaque, eliminating dental calculus by scaling, root planing and controlling other local factors that could induce the periodontal disease –maintenance which should be carried out with certain periodicity, above all in this group of patients.

Our results coincide with NANHES III (12) with regard to the age range of the patients attended. This range is ample, because in the present study it was between 10 and over 70 years and in NANHES III it was from 13 years on. The results also tally with NANHES III with respect to the frequency of gingivitis according to gender because the GI of male patients with vWD was greater than that of the female patients. This difference could be explained by the fact that in our region females go more frequently for dental examination. On the other hand, the lesser degree of oral hygiene, evaluated by SOHI (7), explains the greater frequency of gingival disease in males, although all patients were generally within acceptable ranges.

In Caracas, Venezuela (13), in a population of healthy patients under 30 years of age, adequate SOHI values like those observed in 35% of the population of patients with vWD studied in our region (Maracaibo, State of Zulia) were reported. However, there were acceptable values in more than half the sample studied (52%) and SOHI was deficient in only two patients. This all suggests that advice on oral hygiene for the prevention of periodontal diseases, as in the case of gingivitis, should be reinforced in patients with vWD, taking the importance of maintaining adequate oral health into account, suggesting that it is not the systemic disease in this group of patients that affects the status of the gingiva but the degree of oral hygiene attained by the patient.

From the foregoing, it is deduced that preventive dental measures must be taken and that vWD should be managed with a multidisciplinary team. As is well known, hemorrhagic manifestations of vWD can be seen in the oral mucosa during routine evaluation of the patient. Evaluation by the periodontist is important because it will allow periodontal diseases to be prevented, diagnosed or treated non-surgically in their early stages (gingivitis), thus avoiding their evolving into hemorrhagic complications or having to resort to more radical dental treatments, such as periodontal surgery or exodontia, which merit substitution therapy.

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