Diagnosis of von Willebrand disease in population of Western Mexico

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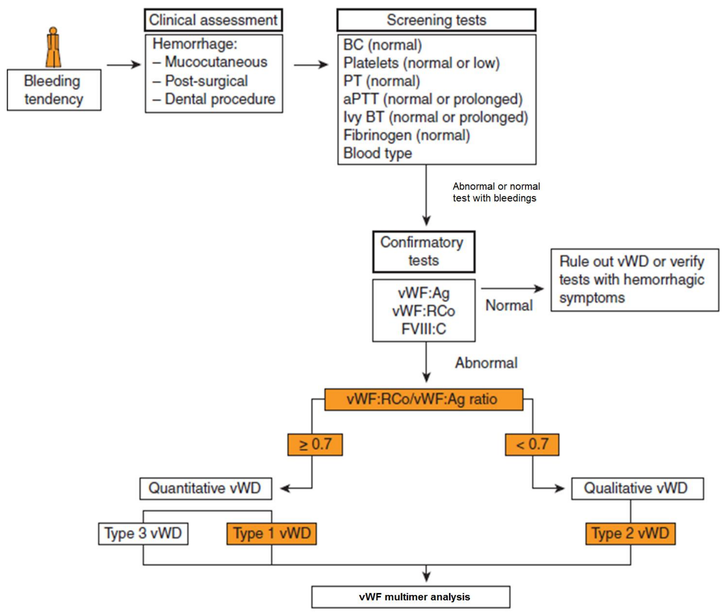
INTRODUCTION / OBJECTIVES. von Willebrand disease (vWD) is highly sub-diagnosed in Mexico because the required tests are complex and mostly unavailable across the country.

This study aims to diagnose vWD patients from Western Mexico by screening and confirmatory tests whose results will be confirmed in a further stage by complimentary proofs and genetic testing.

MATERIAL AND METHODS.



RESULTS. After obtaining consent letter, 203 patients were recruited (112 women, 91 men), aged from 1 to 80 years old, from 203 independent families (63% familial cases; 37% sporadic). They were referred because of mucocutaneous bleeding or asymptomatic with abnormal clotting times. 203 index cases were studied (126 pediatric, 67 adults). Screening and confirmatory tests were performed to obtain the diagnosis of VWD types (table 1). 153 patients (76%) had O blood group, in contrast to general Mexican population (63%), (p=0.024).
Affected population was diagnosed by the screening tests and the ratio vWF:RCo/vWF:Ag and other clotting and platelets disorders were discarded (figure 1).

Table 1. Parameters of clinical assessment, screening and confirmatory tests for vWD type diagnosis.

	p	vWD Normal Labs (n= 21)	vWD Type 1 (n= 56)	Severe vWD Type 1 (n= 8)	vWD Type 2 (n= 55)	vWD Type 3 (n= 2)
*Hemorrhagic Scale (0-30)	0.013	3.6 (0 - 7)	4.3 (0 - 18)	5.9 (2 - 8)	5.03 (0 -14)	13 (6 - 20)
Platelets (≥ 150 10^3cel/µL)	<0.001	284 (182 - 358)	271 (100 - 4725)	300 (165 - 474)	273 (45 - 530)	249 (244- 254)
Bleeding Time (2.5 - 9 min)	0.001	4.4 (2 - 8)	5.4 (2-14)	16 (12 - 20)	7.6 (1 - 43)	
aPTT (< 44 seg)	0.025	46.6 (38 - 70.5)	38.4 (24.8 - 55.1)	40.8 (31.1 - 48.8)	42.7 (28.9 - 81.5)	61.3 (55.1 - 67.5)
FVIII:C (F: 70-150%, M: 50-150%)	0.007	86.4 (31.6 - 131.7)	81 (7.2 - 150.9)	46.8 (15.8 - 130.5)	83.1 (3.4 - 180)	6.8 (1.9 - 11.6)
Blood Group type O		19	42	7	42	2
Blood Group No type O		2	14	1	10	0
vWF:RCo (50-150%)	0.007	90.7 (40 - 152)	44.2 (20 - 120)	31.3 (7 - 83.5)	39.8 (15.8 - 90)	7.3 (0 - 14.6)
vWF:Ag (50-160%)	0.025	75.3 (52 - 102.8)	49.2 (24 - 69.8)	24.4 (12 - 53)	66.5 (4 - 163)	1
vWF:RCo/vWF:Ag	<0.001	1.1 (0.6 - 2.1)	1.1 (0.6 - 6.7)	1.1 (0.6 - 1.6)	0.49 (0.29 - 0.77)	Not valid
vWF:Platelet activity Latex(50-150%)	<0.001	80.6 (54.9 - 101)	64.3 (27.5 - 172)	3.4 (0 - 13.5)	50.4 (0 -114)	0
vWF:Ag Latex (50-150%)	0.025	99.7 (70.7 - 178.7)	59.5 (6.2 - 59.5)	18.9 (13.9 - 23.7)	74 (4.3- 122.2)	0
vWF:Plat Act/vWF:Ag Latex	<0.001	0.9 (0.3 - 1.3)	1.5 (0.6 - 6.7)	0.2 (0 - 1)	0.44 (0.24 - 0.58)	Not valid

* Hemorrhagic scale was assessed according to Federici (2004), and based on it, we established a scale of **Clinical Severity: asymptomatic (0 points); mild (1-3); moderate (4-9); severe (10-30). Average values and (range) of the diagnosis parameters are shown for each vWD type with their significance value (*p*).

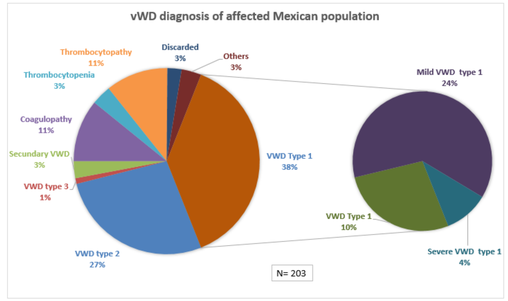


Figure 1. Distribution of vWD diagnosis of Mexican patiens according to vWF:Rco/vWF:Ag ratio and screening testing. vWD type 2 was considered with a ratio < 0.7, and there were identified by vWF multimer analysis subtypes 2A, 2B and normal patterns (probable 2M or type 1). Type 3 cases were also confirmed with the complete vWF absence.

CONCLUSION: The excess of vWD patients with O blood group confirms a higher bleeding risk related to this hemotype that is predominant in Mexican population. vWF multimers analysis only discriminates severe vWD type 1, vWD 3 and 2A subtype while the 2B, 2M, and 2N subtypes require additional tests and even genetic testing for final confirmation.

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ACKNOWLEDEGEMENTS.
MGZ Padilla-Romo has a fellowship from the National Counseling of Science and Technology (CONACyT) number 267218, to develop this project like doctoral thesis.

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Poster Presented at:
DOI: 10.3252/pso.au.WFH2016.2016
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