Assessment of bleeding phenotype in PT-VWD and other RBDs using electronic bleeding questionnaire (eBQ): a retrospective study on 55 subjects

Harmanpreet Kaur[1], Hanan Azzam [2], Margareth Ozelo[3], Stephen Scovil[4], Paula D James[5], Maha Othman[1,6]

1 Department of Biomedical and Molecular Sciences, Queen's University, Kingston, Ontario, Canada; 2 Department of Clinical Pathology, Mansoura University, Egypt; 3 Faculty of Medical Sciences, University of Campinas, Sao Paulo, Brazil; 4 New Atom Technologies Inc., Kingston, Ontario, Canada; 5 Department of Pathology and Molecular Medicine, Queen's University, Kingston, Ontario, Canada; 6 St Lawrence College, Kingston, Ontario, Canada

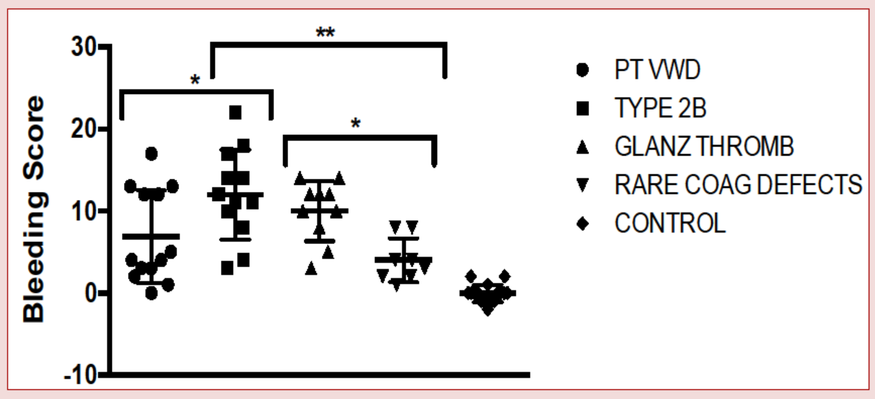
BACKGROUND

Rare bleeding disorders such as platelet type von Willebrand disease (PT-VWD) pose diagnostic challenges and remain under-reported. Definitive information about the presenting bleeding symptoms and the need for haemostatic support during times of haemostatic challenge is lacking. Specific guidelines regarding the diagnosis and treatment together with appropriate patient monitoring are compromised by the limited understanding of the clinical phenotype. Quantitation of bleeding symptoms using a standardized bleeding questionnaire that produces a valid bleeding score (BS) has proven to be useful in the diagnosis of mild bleeding disorders.

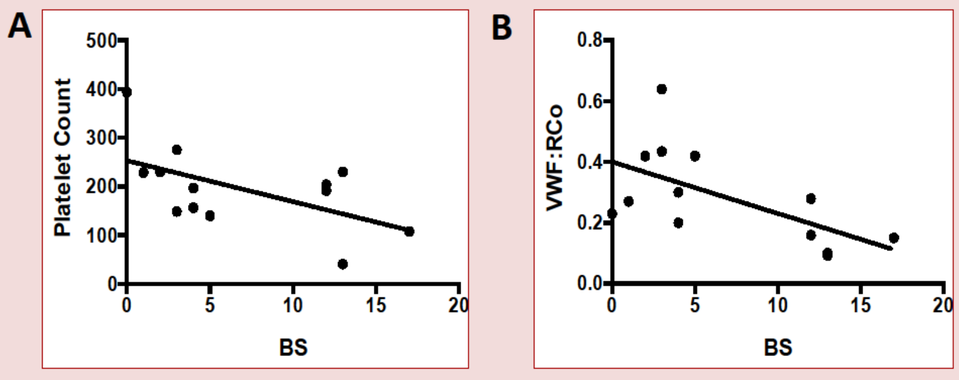
METHODS

This retrospective study used an eBQ version of the condensed MCMDM-1VWD together with a systematic analysis of laboratory phenotype of 41 patients and 14 controls. Patients were as follows: 13 PT-VWD, 12 type 2B VWD, 8 Glanzmann's thrombasthenia, 8 rare coagulation factor deficiencies [5 children and 3 adults; 2 FXIII, 2 FV, 2 FVII, 1 FXI and 1 combined FV and FVIII deficiencies]

RESULTS



- There was a significant increase in BS of type 2B VWD in comparison with PT-VWD (*P < 0.05) and rare coagulation factor deficiency defects (**P < 0.01).
- BS of all the groups were significantly different than the controls (***P < 0.0001).



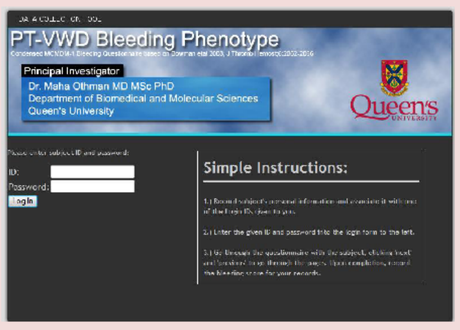
- There was a significant negative correlation between BS and each of platelet count and VWF:RCo in PT-VWD (*P < 0.05).

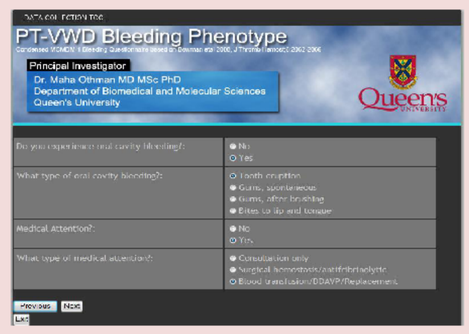
	PT-VWD Median (range)	Type 2B VWD Median (range)	P value
FVIII:C (U/mL)	0.50 (0.29-0.79)	0.47 (0.30-1.77)	0.379
VWF:Ag (U/mL)	0.71 (0.37-1.15)	0.45 (0.24-1.00)	0.125
VWF:RCo (U/mL)	0.27 (0.10-0.64)	0.38 (0.13-1.05)	0.228
VWF:RCo/VWF:Ag	0.37 (0.16-0.80)	0.55 (0.20-1.0)	0.076
Platelet count (x10⁹/L)	197 (108-275)	102.5 (30-369)	0.03
Bleeding score	4 (0-17)	11.5 (3-22)	<0.05

AIM

- To investigate the utility of an electronic bleeding questionnaire (eBQ) in assessment of bleeding phenotype in a group of rare bleeding disorders
- Comparative analysis of PT-VWD and other RBDs

RESULTS





Characteristics of the bleeding phenotype in all investigated subjects based on the eBQ

	PT-VWD n=13	Type 2B VWD n=12	Glanzmann's Thrombasthenia n=10	Rare Coagulation Factor Defects n=8	Normal Control n=16
Females, no (%)	11 (84.6)	6 (50)	9 (90)	4 (50)	11 (68.7)
Mean age, years (range)	37.6 (4-67)	43.8 (18-67)	27.2 (3-58)	10.9 (4 mo-30)	27.2 (4-44)
Age groups (years)					
<15	1	0	1	5	2
15 - 30	4	5	6	3	8
31 - 50	5	1	1	0	6
51 - 70	3	6	2	0	0
Median bleeding score (range)	4 (0-17)	11.5 (3-22)	11 (3-14)	3.5 (1-8)	0 (-2-2)
Normal bleeding score	5	1	1	1	16
Abnormal bleeding score	8	11	9	7	0

Characteristics of the bleeding phenotype in all investigated subjects based on analysis of bleeding symptoms

	PT-VWD n=13 (F 11)	Type 2B VWD n=12 (F 6, M 6)	Glanzman's Thrombasthenia N=10 (F 9, M 1)	Rare Coagulation defects n=8 (F 4, M 4)	
				Adults (3)	Children (5)
Nose bleeding, no (%)	8 (61.5)	7 (58.3)	7 (70)	2 (66.7)	1 (20)
Easy bruising, no (%)	11 (84.6)	12 (100)	8 (80)	3 (100)	1 (20)
Bleeding from minor wounds, no (%)	6 (46.1)	9 (75)	8 (80)	2 (66.7)	1 (20)
Oral cavity/Dental extraction bleeding, no (%)	8 (61.5)	9 (75)	9 (90)	3 (100)	-
Menorrhagia, no (%)	4 (36.4)	6 (100)	9 (100)	3 (100)	-
Post operative bleeding, no (%)	4 (30.8)	7 (58.3)	2 (20)	-	-
Gastro intestinal bleeding, no (%)	2 (15.4)	5 (41.6)	2 (20)	-	-
Hemathorsis, no (%)	1 (7.7)	2 (16.7)	-	-	1 (20)
Post partum hemorrhage, no (%)	6 (54.5)	2 (33.3)	-	1 (33.3)	-
CNS bleeding, no (%)	-	2 (16.7)	-	-	1 (20)
Muscle hematomas, no (%)	2 (15.4)	1 (8.3)	1 (12.5)	-	-
Umbilical bleeding, no (%)	-	-	-	-	2 (40)
Mild bleeding phenotype, no (%)	6 (46)	3 (25)	1 (12.5)	1 (33.3)	3 (60)
Moderate bleeding phenotype, no (%)	-	1 (8)	-	-	-
Severe bleeding phenotype, no (%)	7 (54)	8 (66.7)	9 (87.5)	2 (66.7)	2 (40)

CONCLUSIONS

- The electronic nature of the questionnaire facilitated gathering of distant RBDs data worldwide.
- We showed the usefulness of the objective analysis in understanding the clinical phenotype of RBDs that may lead to improving diagnosis, management and patient follow up.
- Larger prospective studies are warranted to further evaluate the utility of the eBQ in RBDs and confirm these retrospective results

REFERENCES

- Bowman M, Mundell G, Grabell J, Hopman WM, Rapson D, Lillicrap D, *et al.* Generation and validation of the Condensed MCMDM-1VWD Bleeding Questionnaire for von Willebrand disease. *Journal of thrombosis and haemostasis : JTH* 2008; **6:** 2062-6.
- Peyvandi F, Cattaneo M, Inbal A, De Moerloose P, Spreafico M. Rare bleeding disorders. *Haemophilia: the official journal of the World Federation of Hemophilia* 2008; **14 Suppl 3:** 202-10.
- Hafez M, El-Tahan H, Awadalla M, El-Khayat H, Abdel-Gafar A, Ghoneim M. Consanguineous matings in the Egyptian population. Journal of medical genetics 1983; 20: 58-60.
- Nurden AT, Pillois X, Wilcox DA. Glanzmann thrombasthenia: state of the art and future directions. *Seminars in thrombosis and hemostasis* 2013; **39:** 642-55.