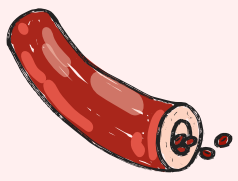
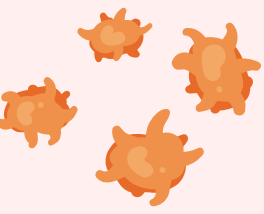
PLATELET TYPE VON WILLEBRAND DISEASE

2B OR NOT TO 2B?

WHAT IS PT-VWD?

Rare autosomal dominant **bleeding disorder** first described in 1982.





Genetic defect is in **platelets** rather than von Willerband factor (VWF).

characterized by:

abnormally high binding affinity of the platelets to the VWF

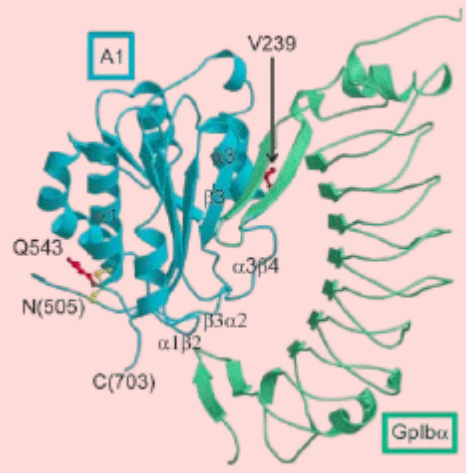
→ platelet hyperresponsiveness

MOLECULAR PROFILING

Genetic Basis

PT-VWD is caused by a **gain-of-function mutations** in the platelet **GP1BA gene**

→ **Functional defect in the platelet GPIba protein;** the receptor for VWF leading to increased PLT-VWF binding; loss of VWF multimers + low PLT



The GP lb-A1 protein complex

A GLIMPSE INTO HISTORY

1980 — Japanese group; **Takashi et al.** reported a similar abnormality to PT-VWD

1982 — First described by **Dr. H. Weiss** (Pseudo VWD) and **Dr. J. Miller** (PT-VWD)

2007 — Establishment of PT-VWD Registry Website by **Dr. M. Othman**

2008 — Development of the murine model by **Dr. Jerry Ware**

2016 — 55 patients enrolled in the registry world wide. Generation of the **first registry report**

2020 — Development of ISTH clinical guidance by **Drs. M. Othman & P. Gresele**

References

Created by Fatin Mustafa, BHSc, Queen's University (2024)

CLINICAL FEATURES

- **Nosebleeds** & **Menorrhagia**
- Excessive bleeding after tooth surgery, tonsilectomy, among other **surgical procedures.**
- Pronounced bleeding following drugs with **anti-platelet** activity

PREGNANCY

Increase in VWF during pregnancy **heightens platelet clearance** resulting in increased thrombocytopenia

DIAGNOSIS & TESTING

Key feature: enhanced ristocetin- induced platelet aggregation (RIPA) reflecting the increased platelet-VWF binding

Type 2B VWD (more frequent) **shares most clinical and laboratory features** of PT-VWD, including enhanced RIPA

↳ differentiating between the two is **difficult**

LABORATORY TECHNIQUES

RIPA mixing studies

Cryoprecipitate challenge

Flow cytometry based RIPA

DNA ANALYSIS

A1 domain (exon 28) VWF gene

Platelet GPIBA gene

Gold standard method of diagnosis!

TREATMENT

Replacement therapy in the form of VWF/VIII/ preparations or drugs that increase endogenous VWF release

↳ platelet count reduction, exacerbating the condition

Major Bleeding

Platelet transfusion & VWF rich concentrates (if VWF is low)

↳ if unavailable or patient does not respond, then **90 µg/kg of rFVII** may be administered

Minor Bleeding

1. **10-30mg/kg** of tranexamic acid every 8 hours.
2. 1,8-deamino-d-arginine vasopressin (DDAVP) may be used after **trial administration** and a positive patient response

RECOMMENDATIONS

1. Consider the possibility of PT-VWD in all cases of type 2B VWD
2. Follow the **International Society on Thrombosis and Haemostasis (ISTH)** guidelines for diagnosis

References

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