# A case of hematidrosis complicated with von Willebrand disease

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## INTRODUCTION

✓ von Willebrand disease (VWD) is caused by quantitative or qualitative abnormalities of von Willebrand factor (VWF), which plays an important role in hemostasis.

✓ VWD can be divided into three major categories, type 1, 2, and 3, based on VWF activity, antigen levels, and multimer analysis[1]. Type 1 is a (partial) quantitative decrease in VWF with qualitatively normal VWF, type 2 is qualitative abnormalities in VWF, and type 3 is complete deficiency. Type 1 is the most) common [2].

✓ In VWD, platelet adhesive capacity is mainly impaired, resulting in epistaxis, purpura, and hematomas, oral bleeding, abnormal menstrual bleeding, gastrointestinal bleeding, hematuria, and other recurrent mucous membrane and skin bleeding.

✓ Hematidrosis is extremely rare disease characterized by bloody sweating from non-traumatized skin and mucous membranes. There have been only a few dozen cases reported worldwide [3]. The cause and pathogenesis of hemosiderosis are not known, but it is said that it can be caused by extreme stress, such as death threats.

✓ Here, we report 14-year-old girl of hematidrosis complicated with VWD.

## AIM

To diagnose whether the patient's bleeding symptoms are due to VWD or hematidrosis.

## METHOD

We showed her clinical course and analyzed her blood samples. The presentation of this case and the publication of the photographs have been approved by the patient and the parents.
Comprehensive coagulation function analysis using rotational thromboelastometry (ROTEM), total thrombus-formation analysis system (T-TAS), and Multiplate were performed to evaluate her coagulation function.

## REFERENCES

1) Thromb Haemost, 71, 520-525, 1994,
2) Jpn J Thromb Hemost, 32, 413-481, 2021
3) J Dermatol, 47, 166-168, 2020

## CONTACT INFORMATION

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## RESULTS

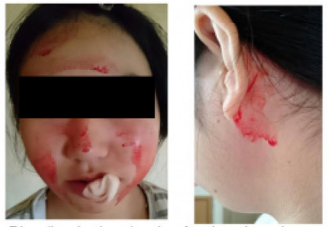
【 Patient 】 14 years old, female

【 Family History】 The 3rd of 3 children, no bleeding episode

【Past History】 Asthma bronchitis and Atopic dermatitis. No hemostatic abnormalities were noted at the time of tonsillectomy at age 9, surgery for tarsal fusion and fracture of the right forearm (cast immobilization only) at age 11.

【Present History】

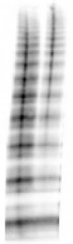
Redness and swelling around the eyes, bleeding and pain in the oral cavity appeared upon waking up in Feb., X-1. She visited a dermatologist and an oral surgeon at a local doctor, but the cause was unknown (allergy or self-injury was suspected). In February, X, her bleeding symptoms worsened, and she was unable to attend school due to oral pain and bleeding symptoms. She visited her previous doctor for a thorough examination, and a blood test showed VWF activity was 29% and VWD was suspected. She had oral and nasal bleeding once every 4 to 5 days. She was referred to our department for a thorough examination. The effect of tranexamic acid prescribed by the previous doctor was not clear.



Bleeding in the cheeks, forehead, and other parts of the face and oral cavity (left), and bleeding from the posterior portion of the auricle (right)

| Laboratory tests | | | |
|---|---|---|---|
| Blood type | O | VWF:RCo (%) | 29.0 |
| WBC (/μL) | 7200 | VWF:Ag (%) | 41.3 |
| RBC ($\times 10^4$/μL) | 429 | D-dimer (μg/mL) | 0.5 |
| Hb (g/dL) | 13.6 | Plasminogen (%) | 98 |
| Plt ($\times 10^4$/μL) | 20.2 | α2-PI (%) | 118 |
| PT (sec) (<11.4sec) | 11.4 | Lupus anticoagulant | 1.1 |
| APTT (sec) (<32.4sec) | 39.9 | Anti-cardiolipin IgG Ab (U/mL) | ≦8 |
| FVIII:C (IU/dL) | 71 | Total PAI (ng/mL) | 18 |
| FIX:C (IU/dL) | 81 | | |

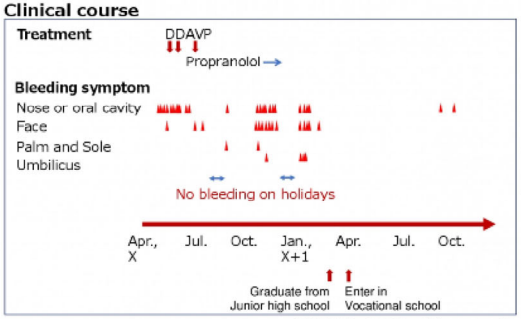
**VWF multimer**



Normal plasma patient

According to the laboratory tests, she was diagnosed with VWD type 1.

**Clinical course**




DDAVP; l-diamino-8-D-arginine vasopressin

| ROTEM | Patient | Control (ave ± SD) |
|---|---|---|
| CT (sec) | 932 | 938 ± 128 |
| CFT (sec) | 448 | 331 ± 86 |
| MCF (mm) | 43 | 43 ± 5 |

CT; clot time, CFT; clot formation time, MCF; maximal clot firmness

| T-TAS | | Patient | Control (ave ± SD) |
|---|---|---|---|
| PL12 | T-10 (min) | 4.3 | 4.4 ± 1.4 |
| | T-30 (min) | 9.2 | 5.7 ± 1.6 |
| | AUC (/min) | 108 | 265 ± 93.7 |
| PL24 | T-10 (min) | 1.3 | 3.2 ± 1.1 |
| | T-30 (min) | 2.4 | 4.0 ± 1.6 |
| | AUC (/min) | 279 | 376 ± 85 |
| AR | T-10 (min) | 14.1 | 12.5 ± 2.2 |
| | T-80 (min) | 19.5 | 17.2 ± 2.8 |
| | AUC (/min) | 1044 | 1222 ± 194 |

| Multiplate | | Patient | Control (ave ± SD) |
|---|---|---|---|
| Ristocetin | AUC (U) | 5 | 108 ± 35.3 |
| | Aggregation | 13.5 | 225 ± 58.6 |
| | Velocity | 3.0 | 15.7 ± 3.7 |
| ADP | AUC (U) | 73 | 77.4 ± 16.8 |
| | Aggregation | 140 | 151 ± 29.4 |
| | Velocity | 14.7 | 15.7 ± 3.7 |
| Collagen | AUC (U) | 103 | 98.9 ± 21.1 |
| | Aggregation | 190 | 185 ± 37.9 |
| | Velocity | 25.8 | 23.6 ± 5.0 |

AUC; area under the curve

✓ The episodes usually happed before going to junior high school in the morning and no bleeding symptoms were seen during the holidays.
✓ Each episode lasted several hours and was usually self-limited.
✓ DDAVP (1-deamino-8-D-arginine vasopressin) was administered as a treatment for the bleedings, but no apparent effect was observed although VWF:RCo was elevated after administration of DDAVP.
✓ Comprehensive coagulation function analysis using rotational thromboelastometry (ROTEM), total thrombus-formation analysis system (T-TAS), and Multiplate were performed to evaluate her coagulation function and showed the almost normal range except for PL in T-TAS and ristocetin in Multiplate.
✓ Oral propranolol was commenced because the drug is considered effective for hematidrosis. However, no immediate effects were observed after propranolol administration.
✓ She was referred to psychiatrist and her psychiatric disorders at school was revealed.
✓ The frequency of bleeding decreased remarkably after graduation from junior high school.

## CONCLUSIONS

We report a case of VWD type 1 complicated with hematidrosis, possibly due to not bleeding disorder by VWD type 1 but mental stress at junior high school.