

Von Willebrand Disease

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Bleeding Disorder in Dogs



Von Willebrand's Disease in Dogs

Von Willebrand's disease (vWD) is a blood disease caused by a deficiency of von Willebrand Factor (vWF), an adhesive glycoprotein in the blood required for normal *platelet* binding (i.e., clotting) at the sites of small blood vessel injuries. In addition, vWF is a carrier protein for coagulation Factor VIII (necessary for blood to clot). A lack of vWF impairs platelet stickiness and clumping. Similar to *hemophilia* in humans, this condition can lead to excessive bleeding following an injury, due to the lack of clotting.

VWF is an autosomal (non-sex-linked) trait, which both males and females express and transmit genetically and with equal frequency. The expression pattern of the severe forms (Types 2 and 3 vWD) is recessive while the milder form (Type 1 vWD) appears to be recessive or incompletely dominant. This is the most common hereditary blood clotting disorder in dogs, occurring with more frequency in some breeds, including German shepherds, Doberman pinschers, standard poodles, Shetland sheepdogs, and golden retrievers.

Symptoms and Types

- Spontaneous *hemorrhage* from mucosal surfaces:

- Nosebleeds
- Blood in the feces (black or bright red blood)
- Bloody urine
- Bleeding from the gums
- Bleeding from the vagina (excessively)
- Bruising of skin
- Prolonged bleeding after surgery or trauma
- Blood loss *anemia* if there is prolonged bleeding

Causes

- Hereditary vWD is caused by mutations that impair vWF synthesis, release, or stability.

Diagnosis

Your veterinarian will perform a thorough physical exam on your dog, taking into account the background history of your dog's health and onset of symptoms. A blood chemical profile will be performed, with a complete blood count, a *urinalysis*, and an electrolyte panel. If there has been blood loss, a regenerative anemia will be seen on the complete blood count. Typically, the platelet count will be normal (unless your dog has experienced recent, massive bleeding), and coagulation tests will show normal results.

A clinical diagnosis of von Willebrand disease is based on a specific measurement of plasma vWF concentration bound to the *antigen* (vWF:Ag). The length of time that it takes for platelets to plug a small injury will be measured, with a test called the buccal mucosa bleeding time (BMBT). The BMBT test, along with the platelet function analyzer (PFA 100), are point-of-care screening tests where the endpoints are prolonged in patients with platelet clumping defects and vWF deficiency. Prolongation is nonspecific, and may accompany numerous severe disorders of the blood.

Treatment

Transfusion of fresh whole blood, fresh plasma, fresh frozen plasma, and cryoprecipitate will supply vWF to the blood. Component therapy (fresh frozen plasma or cryoprecipitate) is best for surgical *prophylaxis* (prevention) and nonanemic patients, to prevent red cell *sensitization* and volume overload. Patients with severe vWD may require repeated transfusion to control or prevent hemorrhage. If a dog lacking vWF requires surgery, a pre-operative transfusion should be given just before the procedure.

Living and Management

Most dogs with mild to moderate vWD will continue to have a good quality of life, requiring minimal or no special treatment. Dogs with more severe forms will require transfusion for surgery, and should be transfused if supportive care fails to control a spontaneous bleeding episode. Most of these dogs can be maintained comfortably, but their activities will need to be monitored and limited. If your dog has von Willebrand Disease and it has an episode of prolonged bleeding, call your veterinarian and take it to a veterinary clinic immediately for emergency treatment.