

VON WILLEBRAND'S DISEASE

Von Willebrand's disease is considered to be a mild to moderate bleeding disorder. Many dogs with this disease do not ever experience a severe bleeding episode. But they can and there are reports of fatalities associated with this condition and surgical procedures.

Von Willebrand's factor testing is usually done by comparing a pool of normal dog's von Willebrand's factor levels with the patient's levels and the result given in a percentage. Blood from a number of apparently normal dogs is thus tested for the amount of von Willebrand's factor and the average level is considered to be the "100%" level. Then the lab usually assigns a range that is considered to be normal, generally something like 80 to 150% of the standard level being considered to be in the normal range. Dogs that are carriers of von Willebrand's disease, but not likely to actually have it usually have values in the 40 to 70% range. Dogs with less than 35% of the normal von Willebrand's factor activity are considered to be affected by von Willebrand's disease, in most cases. So a level of 3% definitely falls in the range in which it is likely that your dog does have this problem.

Dogs with von Willebrand's disease do not effectively utilize their platelets for blood clotting and therefore are more likely to have bleeding episodes associated with trauma or surgery. There is variation from day to day and week to week in the results of lab testing for some dogs with this condition but I am not aware of a clear indication that the condition gets worse, or better, with age.

When contemplating surgery on a patient with von Willebrand's disease, there are several things that can be done to increase platelet function at the time of surgery.

- 1) Make sure that no medications that might interfere with platelet function are administered preoperatively or in the immediate post-operative period. An example of these medications would be aspirin or other non-steroidal anti-inflammatory medications.
- 2) Cryoprecipitate, a blood component product, is the best product, currently available, that I am aware of, for increased von Willebrand's activity in the surgical patient. If your vet is ordering blood products for this surgery specifically, it should be possible to get cryoprecipitate instead of fresh frozen plasma. The effect of this is not long lasting and it is best to give the cryoprecipitate close to the time of surgery.
- 3) If cryoprecipitate isn't available, fresh frozen plasma is the next best choice for increased von Willebrand's and platelet activity.
- 4) There is a medication, Desmopressin (also known as DDAVP), that will often increase the von Willebrand's factor in dogs affected with von Willebrand's disease. This is a human nasal spray but it is given subcutaneously prior to surgery in dogs.
- 5) The surgeon should very carefully control hemorrhage during surgery and extra care should be taken to ensure that ligatures are holding well prior to closing the surgical site.

6) There have been several reports about administering Thyroxine to dogs with von Willebrand's disease prior to surgery. At this time the majority of available evidence does not support this practice but it probably doesn't hurt anything, either.

There is a good chance that you will never experience a major problem associated with the von Willebrand's disease. This is even more likely if she had her ears cropped and there was no excessive hemorrhage associated with that procedure. On the other hand, this is a situation in which it pays to be prepared and it is worth paying for your vet to have cryoprecipitate on hand to use prior to surgery as a preventative measure or during surgery as a treatment, if necessary. Fresh frozen plasma is an alternative, but not as good as cryoprecipitate, based on the literature reports. I'd be less likely to purchase DDAVP for a patient but it is another possible preventative measure if administered prior to surgery.

We have done surgery on several patients with von Willebrand's disease without using any of the above measures and have, so far, not had a serious problem. But we keep cryoprecipitate in our freezer to use if an emergency does arise. We have done mucosal bleeding time testing in the past to try to see if there was a need for pre-surgical treatment but the correlation between this test and surgical bleeding is not supposed to be especially high, for this condition.

Q:

Hi Dr. Mike:

My six year old d/c neutered Doberman is finally going to have multiple enlarging [sic] lipomas removed. He is DNA von Willebrands affected but with no clinical episode of bleeding. In anticipation of the surgery, my veterinarian performed the standardized screening tests (CBC, SMA, T4, and coagulation profile) and all appeared to be normal except for : Lipemia 2+ (he had eaten approximately 2 hours before the blood was drawn in addition to a few biscuits given in the vet's office)

creatinine 1.7 (N-.5-1.6)

prothrombin time 19 sec (N 6-12)

In your experience, does the vWD influence the Prothrombin time? The rest of the coagulation profile was fine. He receives no medication other than Heartgard and Frontline Topspot. My veterinarian has no explanation for the finding. Absolutely no use of rat poisons or insecticides around the property. Hope you can help. Thanks.

R

A:

R

I can't offer personal experience in regard to this question but I checked several references and the Prothrombin time should not be elevated due to von Willebrand's disease.

The Prothrombin time (PT) evaluates a group of clotting factors known as the extrinsic factors (II, VII, IX and X). The activated Thromboplastin time (APTT) evaluates the intrinsic factors (VII, IX, XI, XII). I can't explain why factor IX gets to be both an intrinsic and extrinsic factor. In addition, both tests will show abnormalities in fibrinogen and factors X, V and Prothrombin, which are known as the common factors or common pathway.

Von Willebrand's disease should affect factor VII only, so it should only show up as an increase in the APTT time.

I think it would be a good idea to re-evaluate these tests. It is a pain to redo labwork and usually you have to pay for it again, but it can be a good thing to do in some circumstances. In a doberman being cautious is a good thing. It would be nice to know if the creatinine level was a real elevation, too. Not that it would interfere with the present plans for surgery but it would be an important lab value to track over time since it is indicative of kidney problems.

About half of the patients that I treat for exposure to rat poisons have no known history of exposure so checking into this carefully is a good idea, too. Even though it does seem really unlikely.

Mike Richards, DVM
9/24/99

Von Willebrand's and Anemia

Q:

Dr. Mike, My [sic] fiancée and I recently decided to spay our Doberman [sic] Pinschers. We were told that because Dobe's are susceptible to Von Willebrands, that we must have them tested. When we took them in to get tested my vet noticed that my youngest Dobe, 6 month old Moses, had very white gums. She did a test and found out that she is very anemic (15 was her test result). Since then we have not really been updated except to say that it's probably pretty bad. The Von Willebrands test came back negative. My vet says the next step is a bone marrow biopsy! Isn't there other things to look at first? I've been researching and found several diseases with anemia as a symptom - such as IMHA.

Moses shows no other symptoms of anemia other than the white gums. She is very active with our other Doberman, and her eating habits are normal. What do you suggest our next step should be? Thanks, Renee and Chad

A:

Renee- There is a number of possible causes of anemia in this situation. I am a little uncertain about the meaning of a 'negative' von Willebrand's test. When there is no von Willebrand's factor in the blood (which might be called a negative result) then bleeding is likely because von Willebrand's factor is necessary for the blood clotting process. If the test result actually shows that von Willebrand's factor is 50% or more of the average levels in the sample pool that could also be called a "negative" test for von Willebrand's disease, since there would be adequate levels to provide for good blood clotting. I am going to go on the assumption that is the case in the rest of the answer.

Anemia occurs for a number of reasons but they break down into two major categories. Either blood is not being made in the first place (non-regenerative anemia) or else it is being destroyed in some manner even though it is being made by the body. If the destruction outpaces the production, anemia occurs.

Kidney failure, bone marrow disorders, some cancers, some toxins, inherited disorders, ehrlichiosis, drug reactions and iron deficiency can all lead to non-regenerative anemias.

Liver failure, heat stroke, iron deficiency, trauma, immune mediated hemolytic anemia, drug reactions, babesiosis, hemobartenollosis, inherited hemolytic anemias, intestinal parasites (hookworms, esp.) and bleeding disorders (such as von Willebrand's disease) can all lead to regenerative anemias. Even severe flea infestation can cause significant anemia in young dogs.

There are a lot of possible problems. A general blood panel and a clotting factor profile are good first steps in figuring out what is going on. Bone marrow biopsy may be necessary to identify a cause but it seems logical to do the less invasive tests first. A mucosal bleeding time test helps determine if a blood clotting problem is present which is an important concern prior to any surgical procedure.

I hope that this has all been sorted out by now and a treatable problem identified.

Mike Richards, DVM