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Diagnostic Algorithm for von Willebrand Panel

Von Willebrand disease (VWD) is the most common inherited bleeding disorder with a prevalence of approximately 1% and a clinically heterogeneous disorder. It can also occur as an acquired bleeding disorder.

According to revised classification of VWD, the quantitative VWF defects include type 1 (partial deficiency of VWF) and type 3 (complete absence of VWF) in plasma and/or platelets. The qualitative VWF defects include type 2, which is further classified as 4 subtypes by different pathophysiologic mechanisms and will reveal a discordant decrease in the ratio of collagen binding activity (CBA) to VWF:Ag, Ristocetin cofactor activity (RiCof) to VWF:Ag, or factor VIII to VWF:Ag.

Although the functional activity of VWF has traditionally been assessed using the RiCof assay, the usefulness of this assay has limitations due to poor reproducibility. The CBA assay is based on the ability of multimeric forms of VWF to bind collagen, primarily most functional and adhesive high molecular weight (HMW) forms of VWF. The CBA assay is a useful adjunctive to diagnose VWD, and differentiate VWD with deficiency of HMW multimer forms in type 2A and type 2B from type 1. It can also differentiate very low levels of VWF in severe type 1 from complete absence of VWF in type 3.

It has been reported as a better marker for therapeutic efficacy of treatment with DDAVPR (desmopressin) and factor VIII concentrate. Accurate laboratory diagnosis and classification of VWD using both quantitative (antigenic) and qualitative (functional) assays based on the VWD diagnostic algorithm (see attached algorithm) are crucial because the presenting biological activity of VWF determines both the hemorrhagic risk and subsequent clinical management.

Algorithm follows on Page 2.

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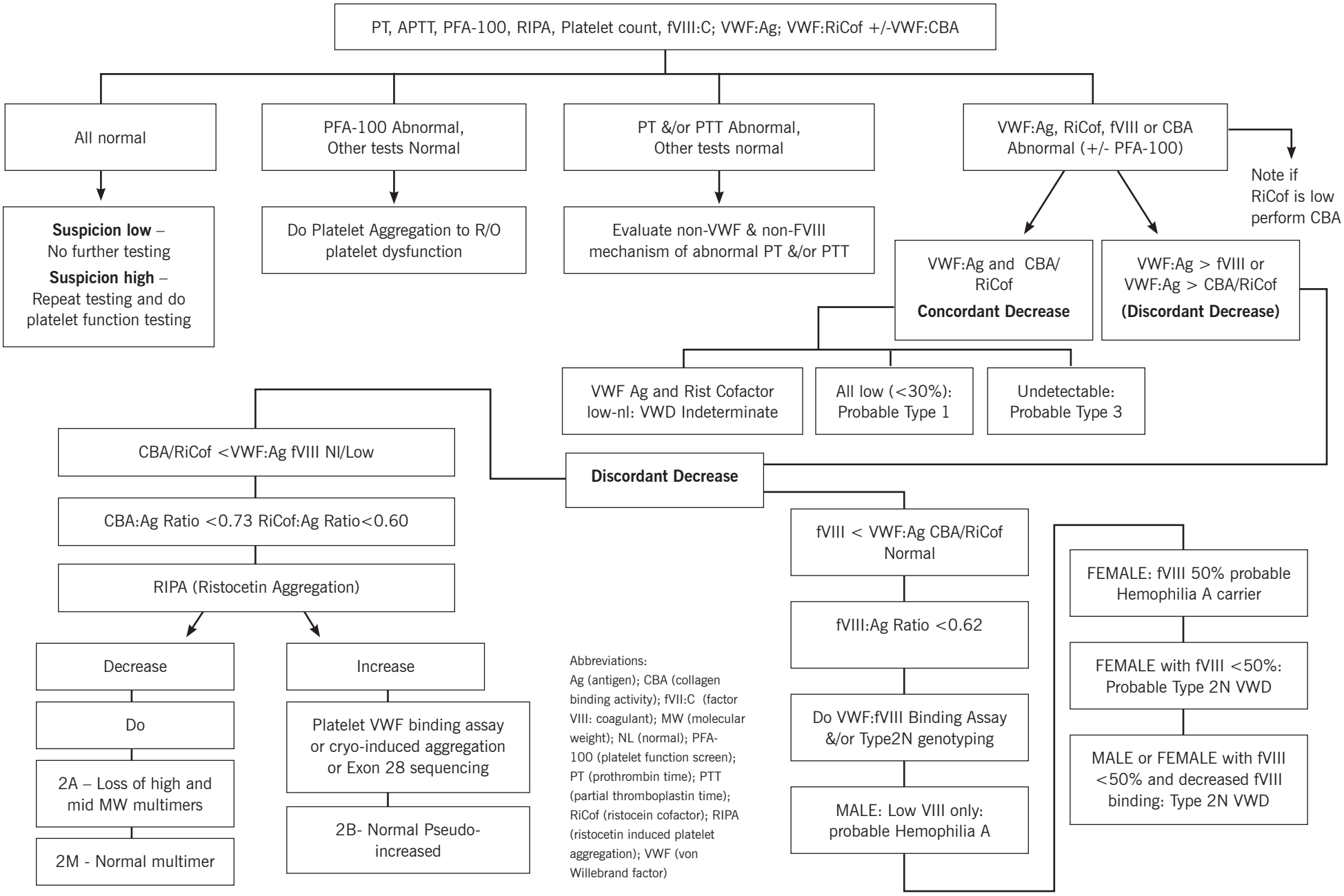

Abbreviations:
Ag (antigen); CBA (collagen binding activity); fVII:C (factor VIII: coagulant); MW (molecular weight); NL (normal); PFA-100 (platelet function screen); PT (prothrombin time); PTT (partial thromboplastin time); RiCof (ristocein cofactor); RIPA (ristocetin induced platelet aggregation); VWF (von Willebrand factor)