Understanding Your Coagulation Testing Options aPTT/PT vs. ACT

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ABSTRACT: aPTT and PT testing helps differentiate between intrinsic, extrinsic, common and multiple pathway deficiencies. Together, these tests are the testing protocol of choice when testing for coagulation disorders.

Discussion: While both the Activated Clotting Time (ACT) test and the Activated Partial Thromboplastin Time (aPTT) test screen for defects in the intrinsic and common pathways, there are some important differences.

- The ACT test is generally less sensitive than the aPTT test.
  - The ACT test will only detect a factor abnormality when there is a 95% or more decrease in single factor activity (less than 5% normal factor activity).
  - The aPTT test can detect a factor abnormality with a 70% or more decrease in single factor activity (less than 30% normal factor activity).
- ACT test results may be affected (prolonged) by thrombocytopenia, thrombopathy and hemodilution. The aPTT is not affected by platelet numbers.
- The ACT can be run only on fresh whole blood and is only available as a patient-side test. The aPTT can be run on fresh or citrated whole blood samples and is available both in-house and at the reference laboratory.
  - Citrated samples provide a more standardized and repeatable methodology, resulting in more accurate results.
  - Citrated samples can be run within two hours of sample collection, allowing for a flexible time frame in which to perform the assay. This is why citrated aPTT and PT tests are preferred over fresh whole blood coagulation testing.
- PT and aPTT tests help differentiate between instrinsic, extrinsic, common and multiple pathway deficiencies.
  - When used in combination, the PT and aPTT tests allow the practitioner to specifically detect the location of the coagulation disorder to one or more of the three pathways. This can only be done when all three pathways are determined.
  - Factor VII (tested by the PT test only) has the shortest half-life and is the first factor to decrease with vitamin K deficiency/antagonism. Factor VII deficiency/dysfunction would not be detected if only the ACT or aPTT tests are performed.

Conclusion: PT and aPTT testing is the suggested testing protocol of choice when a coagulation disorder is suspected, as well as with heparin therapy, suspected factor deficiencies, liver disease, GI disease (especially in cats), and before internal organ biopsy or aspirate.

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