



Retrospective study on viscoelastic coagulation monitoring (VCM) in dogs at a small animal university hospital over 6 years (2020-2026)

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Introduction

Coagulation disorders can result in potentially life-threatening complications such as hemorrhage or thromboembolism, which may impact morbidity and outcome. Point-of-care **viscoelastic coagulation monitoring (VCM)** has enabled in house screening for coagulation disorders.

Objectives

1. Describe VCM profiles in a population of dogs evaluated at a veterinary teaching hospital
2. Determine the frequency of coagulation abnormalities
3. Assess their association with clinical findings, treatment decisions and outcome.

Material and Methods

- **Design:** retrospective case series study
- **Population:** dogs presented to the veterinary teaching hospital of the University of Liège between January 2020 and 2026.
- **Data collected:** signalment, underlying disease, VCM profiles, bloodwork, reported bleeding or thromboembolism, coagulation-related therapeutic interventions (i.e. anticoagulant, antifibrinolytic or blood product administration), outcome. Sepsis was defined by the presence of organ dysfunction, severe deterioration of general condition, and a strongly suspected infectious source.
- VCM profiles were classified as **hyper-** or **hypocoagulable when two or more parameters** (CT, CFT, α angle, MCF) **were consistent with hyper- or hypocoagulability** based on manufacturer reference interval deviations. Hyperfibrinolysis was defined as a decreased lysis index at 45 minutes.
- Association between clinical variables and VCM results were evaluated using univariate and multivariate analyses.

Results

- **369** VCM analyses were performed in **305 dogs**. **Abnormal VCM** profiles were identified in **54.5%** of analyses.
- Median age was 8.8 years [5.5–11.3] and median body weight 13.8 kg [7.0–27.0]; 50.5% were female and 49.5% male
- Clinical conditions included infectious disease (24.8%), inflammatory disease (19.4%), neurological signs (17.9%), respiratory distress (17.1%), pulmonary hypertension (13.6%), sepsis (8.4%) and trauma (4.9%).
- Bleeding occurred in 22.6% of dogs, while suspected/confirmed thrombotic events were reported in 16.1%.

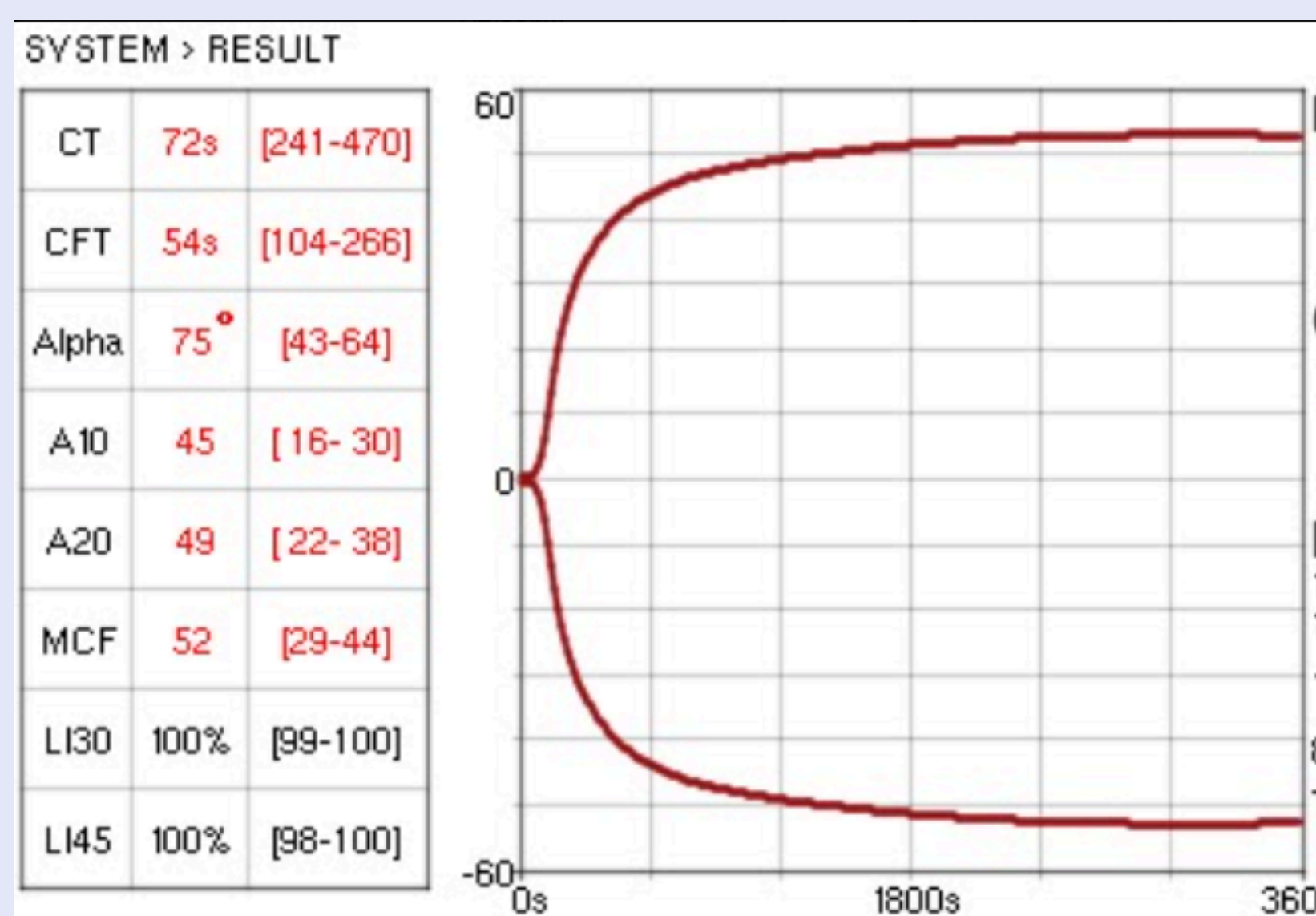


Figure 1. Hypercoagulable VCM profile

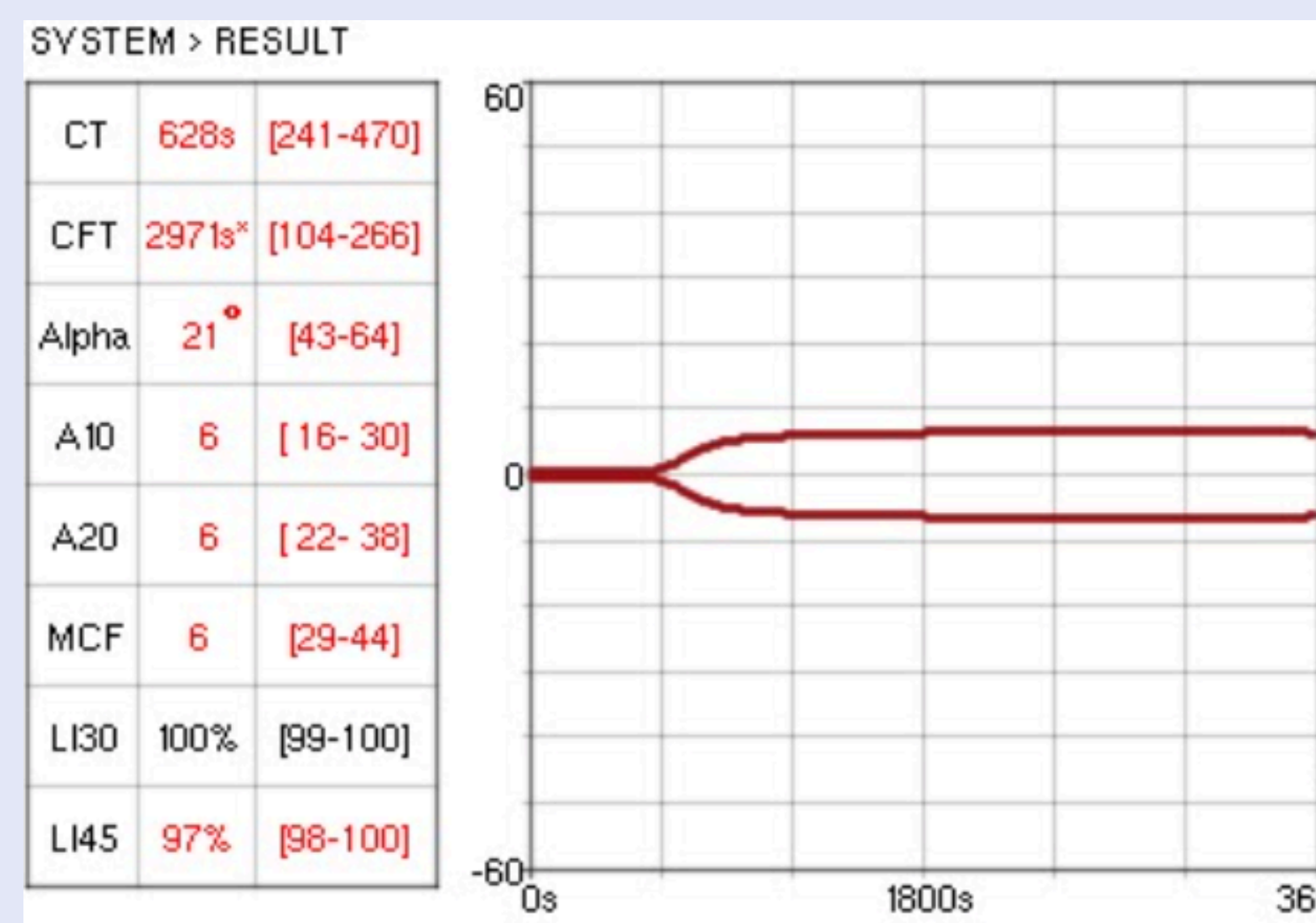


Figure 2. Hypocoagulable VCM profile

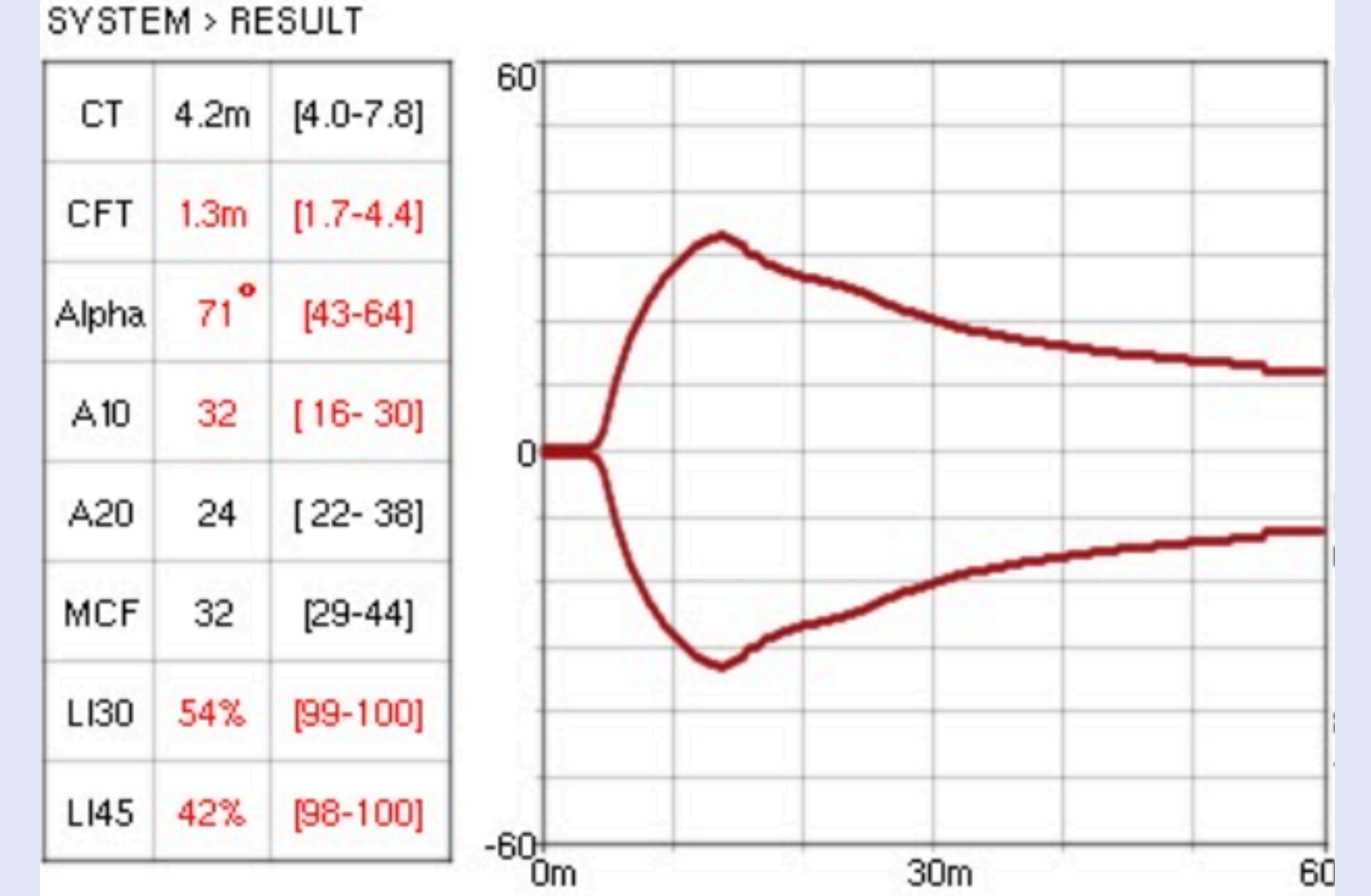


Figure 3. Hyperfibrinolytic VCM profile

- **97/369** (26.3%) profiles were classified as **hypercoagulable**
- Dogs with hypercoagulable profiles had **higher odds of suspected or confirmed thromboembolism** (OR: 2.02, CI95% 1.10–3.71).
- Dogs with hypercoagulable profiles were **more likely to receive coagulation-related therapeutic interventions** (OR: 4.25, CI95% 2.54–7.12).
- **60/369** (16.3%) profiles were classified as **hypocoagulable**
- **Bleeding was more frequent** in dogs with hypocoagulable profiles (OR: 2.16, CI95% 1.15–4.03)
- Dogs with hypocoagulable profiles were more likely to receive **blood products** (OR: 3.74, CI95% 1.95–7.19), particularly **fresh frozen plasma** (OR: 5.20, CI95% 2.49–10.8), but not packed red blood cells.
- **101/369** (27.4%) profiles were classified as **hyperfibrinolytic**.
- Dogs with hyperfibrinolytic profiles were **more likely to receive tranexamic acid** (OR: 1.86, CI95% 1.17–2.96) but not blood products administration.
- Both **hypo- and hypercoagulable profiles** were associated with **increased mortality** (OR: 3.27, CI95% 1.80–5.95, and OR: 1.77 CI95% 1.05–2.97, respectively). **Hyperfibrinolysis** was not significantly associated with mortality (OR: 0.98, CI95% 0.59–1.61)
- **Sepsis** was associated with a **prolonged CFT** (+189.8 s; 95% CI +41.4 to +338.2; p=0.012), and **decreased α -angle** (–6.44°; 95% CI –10.87 to –2.01; p=0.004) and **MCF** (–6.57; 95% CI –10.94 to –2.19; p=0.003).

Conclusion

VCM abnormalities were frequently identified in screened dogs. Hypercoagulable profiles were associated with confirmed or suspected thromboembolism and increased mortality. Hypocoagulable profiles were associated with bleeding and blood product administration. Hyperfibrinolytic profiles were more likely to be associated with tranexamic acid administration. Both hypo- and hypercoagulability were significantly associated with mortality. In septic dogs, VCM profiles were characterized by a prolonged CFT and decreased α -angle and MCF, suggesting a hypocoagulable state. The retrospective design of this study limits causal inference but **may suggest VCM can guide therapeutic decisions as a point-of-care coagulation assessment tool**.