Veterinary Bioscience: Cardiovascular System

LECTURE 17: DISORDERS OF SECONDARY HAEMOSTASIS

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INTENDED LEARNING OUTCOMES

At the end of this lecture, you should be able to:

- list the four major mechanisms responsible for defective secondary haemostasis.
- explain why some animals have a hereditary deficiency of a particular coagulation factor and either never bleed excessively or suffer only from minor haemorrhage
- explain the role vitamin K plays in hepatic synthesis of coagulation factors and list the vitamin K-dependent coagulation factors
- name the most common cause of vitamin K antagonism in domestic animals
- explain how large animal species become poisoned by coumarin-type anticoagulants
- describe the circumstances in which a dog might develop deficiency of vitamin K
- describe the role of the liver in haemostasis
- outline the conditions in which excessive fibrinolysis contributes to defective secondary haemostasis in domestic animals.

KEYWORDS

coagulation cascade, haemophilia, vitamin K, rodenticide, coumarin derivatives, dicoumarol, warfarin, fibrinolysis

LECTURE OVERVIEW

Disorders of secondary haemostasis involve defects in the generation of fibrin or (rarely) the stability of fibrin formed via the coagulation cascade.

Clinical signs suggestive of defective secondary haemostasis include large volume bleeds, haematoma formation, and/or bleeding into body cavities or joints - epistaxis and/or bleeding from other mucous membranes may occur but petechiae, purpura or ecchymoses in skin or mucous membranes are not usually seen - haemorrhage may develop spontaneously or it may be delayed and protracted after a challenge to haemostasis (e.g. trauma, surgery).

The mechanisms responsible for defective secondary haemostasis are:

- inherited deficiency of one or more coagulation factors
- vitamin K antagonism or deficiency
- severe acute or chronic hepatic parenchymal disease
- excessive fibrinolysis (or fibrinogenolysis).

Of these, vitamin K antagonism is the most common mechanism in domestic animals.

FURTHER READING

DA Mosier. Vascular disorders and thrombosis. In: JF Zachary (ed.), *Pathologic Basis of Veterinary Disease*. 6th ed., Elsevier, St Louis, Missouri, USA (2017)

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DO Slauson. Disturbances of blood flow and circulation. In: DO Slauson and BJ Cooper, *Mechanisms of Disease. A Textbook of Comparative General Pathology*. 3rd edition. Mosby, Inc. St Louis, USA (2002)