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## Areshkumar M

Research Associate, Canine  
Research Centre and Networks,  
TANUVAS, Chennai, Tamil  
Nadu, India

## Epistaxis in cattle: An overview

### Areshkumar M

#### Abstract

Epistaxis is an uncommon condition in cattle like in other animals cause by bleeding disorders such as thrombocytopenia, liver disease, coagulopathies and with the use of anticoagulant. Hence it is a rare condition in cattle, making the diagnosis of the cause is difficult. This article will discuss about the condition causing epistaxis in cattle and its possible diagnosis.

**Keywords:** Epistaxis, ruminants, bleeding disorders

#### Introduction

Epistaxis is defined as acute haemorrhage or nose bleed in which bleeding occurs from the nasal cavity of the nostril, in other terms presence of blood at the external nares also known as epistaxis, whereas hemoptysis is called as coughing up of blood. The blood may be small flecks to large volumes flowing from the external nares. Epistaxis is relatively benign in nature, but it can produce a serious, life-threatening situation.

Epistaxis in cattle is very rare condition which makes the diagnosis of underlying cause challenging. Through logical approach and haematological evaluation, a clinical diagnosis can be obtained. Nose bleeding is the cardinal clinical sign of advanced disease and indicates a hopeless prognosis in cattle (Scott *et al.* 2011) <sup>[1]</sup>.

#### Haemostasis

Irrespective of the root cause the haemostasis occur to arrest the bleeding. Primary haemostasis occurs at the site of injury by the platelets. Basically the platelets are non-sticky and not responsive. When there is an injury or inflammation, they change shape and bind to the extra cellular matrix and to each other. Platelets can stop bleeding by themselves and they can express lipids on their surface upon activation that provide a good site for coagulation reaction that take place. The secondary Haemostasis occur by Coagulation proteins which will act on platelet surfaces to form fibrin, by which it stabilizes the platelet plug. Morawitz (1904) <sup>[6]</sup> proposed a model of coagulation in which the Prothrombin is converted into thrombin by thrombokinase and the fibrinogen is converted into fibrin which will form the mesh work to stop bleeding.

#### Pathophysiology

Generally epistaxis results from any one of following abnormalities such as coagulopathy, space-occupying lesion and vascular or systemic disease. It may originate from nasal cavity, paranasal sinuses, guttural pouch (auditory tube diverticulum), oral cavity, pharynx, larynx, trachea, or lungs (Smith, 2015) <sup>[12]</sup>. The above respiratory structural disease may cause epistaxis in animals by mucosal surface involvement (O'Callaghan, 1989) <sup>[8]</sup>.

#### Clinical signs

In disorders of primary haemostasis, only a small amount of blood loss occurs from an injury site before a fibrin clot is formed by secondary haemostasis (Charlotte Bell, 2011) <sup>[1]</sup>. In cases of secondary haemostasis disorder the formed platelet plug is unstable for the bigger injuries. The clinical signs are obvious with profuse mucopurulent nasal discharge with blood (Fig.1), acute dyspnoea and snoring (Wenzel *et al.*, 2012) <sup>[15]</sup>, sneezing, accompanied by yellow-orange nasal discharge. Animals may rub their nasal cavities by pushing sticks or twigs up the nostrils, resulting in lacerations or foreign bodies in the nasal cavity.

#### Correspondence

#### Areshkumar M

Research Associate, Canine  
Research Centre and Networks,  
TANUVAS, Chennai, Tamil  
Nadu, India



**Fig 1:** Bull with Epistaxis

### Condition causing epistaxis in cattle

- Anticoagulant rodenticides (Warfarin and Congeners) inhibit the enzyme vitamin K epoxide reductase, which normally reactivates vitamin K, a crucial component in a number of normal clotting factors, after those factors are consumed in normal maintenance (Khan and Schell, msdvetmanual).
- Coagulation Disorders: Bleeding diatheses may be caused by congenital or acquired defects in the vasculature, platelets, or the coagulation proteins.
- Local trauma (e.g. nose blowing and picking).
- Nasal Obstruction by Foreign body, Ethmoid carcinomas
- Nasal Granuloma associated with *Schistosoma nasale* (Vineet Kumar *et al.*, 2016) [13].
- Toxicities like Ethylene Glycol Toxicity. (The minimum lethal dose of undiluted EG is 2–10 mL/kg in cattle. Younger animals may be more susceptible) and acute bracken fern toxicity
- Vena caval thrombosis and metastatic pneumonia is associated with multifocal abscesses in the lung causes epistaxis,
- Exercise-induced pulmonary hemorrhage (Jeanne Lofstedt, 1998) [3]. Thrombocytopenia may be the result of platelet consumption, decreased platelet production, or platelet destruction. Platelet consumption is most common with septic conditions or DIC. Decreased platelet production is most common with aplastic anemia or infiltration of the marrow with neoplastic cells and Platelet destruction (in addition to that caused by consumption) usually occurs through an immune-mediated process (Christopher and Margaret, 1998) [2].
- Drug treatments (particularly penicillin), lymphosarcoma, and systemic bacterial infections are the most commonly described triggers for immune-mediated thrombocytopenia. In many animals, a source cannot be identified (John Pringle, 1998) [4].
- Congestive heart failure (Epistaxis is common in horse than any other species) (Radostits *et al.*, 2006) [9].
- Bovine neonatal pancytopenia
- Snake bite (Radostits *et al.*, 2006a) [10].

### Diagnosis

The diagnosing the cause of epistaxis in ruminants can be challenging (Newton and Ah-See, 2008) [7]. Although, history, physical examination, laboratory data (Complete blood count, serum biochemistry panel and clotting profile), histopathology can be used as diagnostic tools (Watt and Beck, 1997) [14].

Radiography of the head, neck and thorax is valuable in the

diagnosis of diseases of the respiratory tract of animals.

The nasopharynx, pharynx and larynx of cattle can be examined by endoscopy and this should be done without sedation if possible.

Ultrasonographic examination of the thorax of farm animals and horses is a very useful diagnostic tool in finding the lung disease and fluid accumulation in the lung.

A nasal swab can be obtained from the nasal cavities for the evaluation of the secretions associated with disease of the upper respiratory tract such as infectious bovine rhinotracheitis and allergic rhinitis. For more reliable results and to lessen the contamination that occurs with nasal cavity samples, swabs of the laryngeal- pharyngeal area can be collected.

### Prognosis

The prognosis is based on the underlying causes and time of treatment. Most of the cattle with bleeding disorders has poor prognosis. Proper history collection and thorough physical examination could be helpful in diagnosing the condition and safe guard the life of the animals.

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