

Tracheal Collapse in Pug breed dog and its effective management

Pallav Shekhar¹, Vivek Kumar Singh^{*}, Gyan Dev Singh², Namrata³, Sonam Bhatt¹ & J. K. Prasad⁴

Abstract

Tracheal Collapse is commonly found in toy breed of dog. In the present contest Pug was diagnosed for tracheal collapse by clinical signs and lateral radiography. Effective management was achieved by oxygen supplementation, Butorphanol, Glycopyrrolate, Prednisone, Glucosamine and Chondroitin sulphate and by controlling the body weight of Pug.

Key words: Tracheal Collapse, Pug, Glycopyrrolate, Glucosamine and Chondroitin sulphate

Introduction

Tracheal collapse is a chronic, progressive disease of the trachea that primarily affects certain small breed dogs. The aetiology of tracheal collapse is very complex and currently poorly understood. It is likely multifactorial, with clinical disease resulting from weakening of the tracheal rings and secondary factors leading to the initiation of clinical signs. As per Dallman *et al.*, 1988, reduced glycosaminoglycan, glycoprotein and chondroitin sulphate content of the hyaline cartilage that forms the tracheal rings are the important factors in tracheal collapse is most common in small, toy and miniature breed dogs (Kahn, 2010) but has also been reported in large-breed dogs. However, many dogs remain asymptomatic until later in life with degenerative change of the tracheal cartilage and secondary factors triggering the clinical syndrome of tracheal collapse (Sun *et al.* 2008).

Tracheal collapse can be either congenital or acquired. Early occurrence of clinical signs supports a congenital origin (White & Williams 1994) origin of tracheal collapse. The acquired form of the condition is often caused by chronic respiratory disease, airway irritation, bronchitis and obesity (Maggiore, 2014).

History and clinical findings:

A pug breed dog weighing 12.5 kg was referred to teaching veterinary clinical complex with chief complain of acute episodal coughing or reverse sneezing. Dog was showing normal body temperature. On physical examination coughing was elicited while palpation of trachea. Owner complains that the coughing wax while lifting the Pug on lap and when lease applied on neck region. The peculiar coughing called Goose Hunk, waxes during the process of excitement, eating and drinking while wane during rest and peaceful environment. On clinical examination inspiratory dyspnoea, wheezing and stridorous was noticed during physical examination.

Diagnosis and Treatment:

Lateral radiograph of neck and thoracic cavity was taken and interpretation of radiograph was made on computed radiography (Fig. 1). Health and Atkins (2012) mentioned that tracheal sound and lateral radiographs of neck and thorax are diagnostic for tracheal collapse. There is narrowing of trachea at the thoracic inlet and ventro-dorsal flattening (Fig 1 marked with red). In an emergency oxygen supplementation with cool environment and Butorphanol at the dose rate of 0.05mg/kg im helps in stabilizing the patients. Glycopyrrolate, a acetylcholine inhibitor was used 1mg orally daily for one month along with Prednisone @ 0.5mg/kg.b.wt at tapering dose. Glucosamine and Chondroitin combination mixture (Synopet®) was used as supportive medicine @ 4gm orally continuously for one month. Marbofloxacin (Marbomet®) @ 5mg/kg.b.wt was used orally for one month to prevent

✉ shekhar.medivri@gmail.com

Department of Veterinary Medicine, Bihar Veterinary College, BASU, Patna-14
Department of Veterinary Clinical Complex, Bihar Veterinary College, BASU, Patna-14
Dean, Bihar Veterinary College, BASU, Patna-14



Fig 1. Lateral radiograph of pug showing collapse of trachea

respiratory tract infection. Management of case was done by removing the neck collar with harness and controlling the obesity.

Discussion:

Pug is a toy breed dog commonly reared in-house. Goose honk, reverse sneezing, seal bark or wheezing are the common complain of the pet owner. These symptoms particularly evident during exercise, excitement, lifting and pulling the lease. Obesity, application of neck collar and anatomical abnormality are the chief cause of tracheal collapse in Pug breed dogs. Heat, excitement, stress or concurrent respiratory disease such as pneumonia (Beal 2013) are the triggering factor of tracheal collapse.

Radiograph of thoracic cavity was found to be the gold standard and rapid, noninvasive technique for diagnosis of collapsing trachea. In this case lateral radiograph of neck showing collapsing trachea and ventro-dorsal flattening was found suggestive of tracheal collapse. This is in agreement with Heath and Atkins, 2012. However, Montgomery *et al.* 2015 mentioned that radiographs some time proves to underestimate tracheal diameter compared to computed tomography (C T). Also, as tracheal collapse is a dynamic real time evaluation, fluoroscopy has been shown to be more accurate in documenting the location of tracheal collapse compared to radiographs (Macready *et al.* 2007). In the present case efficient management was done by removing the neck collar by harness and controlling the obesity. In an emergency oxygen supplementation with cool environment and Butorphanol at the dose rate of 0.05mg/kg im helps in stabilizing the patients. Glycopyrrolate a acetylcholine inhibitor was used for long period as it does not cross the blood brain barrier. It reduces the secretion in trachea and improves the air passage. Prednisone act as anti-inflammatory and Glucosamine and Chondroitin combination mixture (Synopet®) helps in building the cartilage of the collapsing trachea. Marbofloxacin helps in checking the respiratory tract infection. Removal of neck collar and reduction of body weight reduce the pressure on neck and thus help in early recovery (Herrtage, M. E. 2003).

@ Brand of Intas Animal Health, Ahmedabad.

References:

- Dallman, M. J., Mc Clure, R. C., Brown, E. M. (1988). Histochemical study of normal and collapsed tracheas in dogs. *American Journal of Veterinary Research* 49, 2117-2125
- Heath, D and Atkins, L.B. (2012). Respiratory Emergencies. In: Norkus, C (ed.). *Veterinarian Technician's Manual for small animal emergency and critical care*. 1st edn. John Wiley & Sons, Ltd, UK. P. 135.
- Herrtage, M.E. (2003). Respiratory Disorders. In: Schaer, M (ed.). *Clinical Medicine of the Dog and Cat*. 2nd edn. Manson Publishing Ltd.london UK. P. 180.
- Kahn, C. M. (2005). Rickettsial diseases. In: *The Merck Veterinary Manual*. 10th edn. Merck & Co, U.S.A. p. 1364.
- Macready, D. M., Johnson, L. R., Pollard, R. E. (2007). Fluoroscopic and radiographic evaluation of tracheal collapse in dogs: 62 cases (2001-2006). *Journal of the American Veterinary Medical Association* 230, 1870-1876
- Maggiore, A. D. (2014). Tracheal and airway collapse in dogs. *Veterinary Clinics of North America: Small Animal Practice* 44, 117-127
- Montgomery, J. E., Mathews, K. G., Marcellin-Little, D. J. (2015). Comparison of radiography and computed tomography for determining tracheal diameter and length in dogs. *Veterinary Surgery* 44, 114-118
- Sun, F., Usón, J., Ezquerro, J. (2008). Endotracheal stenting therapy in dogs with tracheal collapse. *The Veterinary Journal* 175, 186-193
- White, R. A. S. & Williams, J. M. (1994). Tracheal collapse in the dog, is there really a role for surgery? A survey of 100 cases. *Journal of Small Animal Practice* 35, 191-196