

Importance of Radiographic Measurements in Diagnosis of Megaesophagus in Dogs and Their Association with Hypothyroidism

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Megaesophagus is a disorder of the oesophagus in human and other mammals, in which the oesophagus is enlarged abnormally. Lack of normal peristaltic movements, paralysis of oesophageal musculature or obstructions are the causes of this condition. Megaesophagus could arise secondary to underline conditions such as hypothyroidism, immune mediated diseases, and congenital conditions etc. Plain thoracic radiography is useful in the diagnosis of megaesophagus in dogs as the delineation of the oesophageal wall is well visualized. The objective of the current study is to find the association between the Relative Oesophageal Diameters (ROD) with proven cases of hypothyroidism. ROD is the ratio between Thoracic Inlet Diameter and average oesophageal diameter (OD). Medical records of twenty dogs with megaesophagus admitted to the Veterinary Teaching Hospital, University of Peradeniya from 2020 to 2021 February, were reviewed. The OD was measured in each left lateral radiograph using the image processing software (FCR PRIMA V Console). The measurements were taken in parallel with a line drawn perpendicular to the midpoint of the body of each thoracic vertebra (T1-T10). Also, four radiographic findings, the triangular air column in cervical oesophagus, trachea-oesophageal stripe sign, diffuse oesophageal dilatation and aspiration pneumonia were assessed. In comparison, 6 cases of proven hypothyroidism (T4 levels < 1.0 µg/dL) showed severe oesophageal dilatation as evident in the radiographs. Two sample t test ($\alpha = 5\%$), showed there is a significant difference between the mean ROD values of hypothyroidism cases and non-hypothyroidism cases ($P=0.0452$). In addition, the radiographic findings, the triangular air column in cervical oesophagus and trachea-oesophageal stripe sign were also prominent. It is concluded that ROD could be used to confirm that megaesophagus is caused by hypothyroidism.

Keywords: Dog, Megaesophagus, Hypothyroidism, ROD