

Student Clinical Report

Respiratory Distress Due to a Laryngeal Mass in a Holstein Cow

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History

A five year old Holstein cow was presented to the University of Wisconsin Veterinary Medical Teaching Hospital with respiratory noise of several months and anorexia of approximately two weeks duration. She had been treated with flunixin meglumine and penicillin with no signs of improvement. The respiratory noise had gradually increased and the cow's condition worsened over a two week period. She developed a fever, began losing weight and milk production dropped from 125# to 85# or less. The cow had been born and raised on the farm and was 74 days fresh. The calving was normal and no oral or jugular IV medication had been administered since freshening. The only change in environment was the addition of two calves purchased at auction in Fon du Lac, Wisconsin two weeks prior to the onset of signs.

Physical Examination

On examination, the cow was very thin and depressed with increased heart and respiratory rates. The neck was extended with the front legs in a base wide stance and severe inspiratory dyspnea with some expiratory dyspnea was present. Ketones were noted on the cow's breath. Upon palpation, crepitus was noted over the dorsal spinous processes of the neck and throat and

along the lateral ventral thorax. When the head was lowered, a frothy exudate drained from the right nostril. Swelling in the laryngeal area was observed as well. A differential diagnosis to explain the respiratory distress was formulated and included traumatic pharyngitis, ruptured trachea and upper airway obstruction.

Diagnostic Tests

The diagnostic plan included:

- oral exam with speculum and digital palpation
- tracheal and pharyngeal endoscopy
- laryngeal and pharyngeal radiographs
- thoracic radiographs
- arterial blood gases

The endoscopic examination revealed a circumscribed soft tissue mass associated with the right arytenoid cartilage that was partially obstructing the larynx. The laryngeal, pharyngeal and thoracic radiographs demonstrated gas in the soft tissues dorsal to the pharynx, in the mediastinum and the pleural cavity. The soft tissues of the larynx at the region of the arytenoids were swollen in an irregular pattern. The interpretation of these findings was upper airway obstruction due to a mass with secondary pneumomediastinum and pneumothorax. A traumatic penetration of the caudodorsal pharynx could not be

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identified. The arterial blood gases were determined to be: $p\text{CO}_2$ -46mm and $p\text{O}_2$ -79mm. The slight increase in $p\text{CO}_2$ and the decrease in $p\text{O}_2$ can be explained by the presence of the arytenoid mass obstructing the larynx leading to hypoventilation and secondary hypoxemia.

Discussion

After the discovery of the arytenoid mass, the treatment options as well as prognoses were discussed with the owners. They then opted to dispose of the animal themselves which left no chance for further diagnostics or a necropsy. Factors involved in the decision were:

- cost of further diagnostic tests and treatment
- guarded prognosis that treatment would be successful

Though the case was not pursued, a list of probable diagnoses would likely include; lymphosarcoma, chondroma or chondritis. A discussion of each follows.

Lymphosarcoma:

Bovine lymphosarcoma (LSA) in adult cattle more than two years of age usually involves multiple organ systems and is associated with Bovine Leukemia Virus (BLV). This form of LSA is also known as the enzootic form and is the most common neoplastic disease of cattle with an estimate of approximately 29% of adult cattle in the Midwest being affected.^{1,2,5} Because of the multiple organ system involvement, clinical signs reflect those organs that are involved. The most commonly affected sites are heart, abomasum, uterus and kidney.^{1,2,3,4} Although this case involves the arytenoid cartilage, there are reported cases of nasal involvement³ and mandibular involvement.⁴ The presenting clinical signs of this case closely match those of LSA; and rapid onset of weight loss, anorexia, depression and decreased milk production.^{1,2,5} This would place LSA very high on the differential diagnosis list for the arytenoid mass in this case. If a definitive diagnosis were to be made, surgical biopsy followed by histopathology would have been the most efficient method. A positive BLV test would also have helped keep the diagnosis as a differential; a negative BLV test would have ruled it out.

Chondroma:

No reports of chondroma in the bovine species were found. However, chondrosarcoma has been reported in the equine species involving the laryngeal area and it is not inconceivable that it occur in cattle.

Chondritis:

No current reports of laryngeal chondritis in cattle were found. There are reports of this problem in horses

and sheep as well as other species.^{1,6} Extrapolating the information from that obtained in sheep, chondritis causes obstructive dyspnea, edema of the larynx and chronic abscess formation. The disease in sheep has been attributed to the feeding of dry grain with penetration of the mucosa and *C. pyogenes* entry. The disease in cattle has been hypothesized to be from contact of adjacent mucosa causing ulceration extending into the submucosal tissue. This may lead to excess granulation tissue with no abnormalities of the laryngeal cartilage itself.⁶ As the appearance of the mass in this case clearly appeared to involve the cartilage itself with no ulcerations of the laryngeal area, it seems unlikely that this was a case of chondritis. Again, definitive diagnosis would have to have been made with biopsy and histopathology.

Conclusion

Though the clinical diagnostic tests did not yield a definitive diagnosis and necropsy was not performed, it is reasonable to play the odds and make an educated guess as to the cause of the arytenoid mass. Due to the prevalence of lymphosarcoma in adult cattle, it is likely that the mass was of lymphoid neoplasm origin. The appearance of the mass and the presenting clinical signs of the cow also most closely match those associated with LSA even though the site of the mass is unusual.

LSA has become a major economic concern to the cattle industry in recent years. Death of cattle, loss of milk production and premature culling as well as condemnation of carcasses at slaughter provide substantial economic losses to producers.¹ If this mass had been confirmed to be LSA, periodic BLV testing of the herd and avoidance of possible modes of transmission such as using blood contaminated instruments, maintaining insect control and disposing of or disinfecting needles after each use can greatly reduce the occurrence of LSA in a herd.⁵

In any case, due to the site of the mass in this case, treatment of either lymphosarcoma, chondroma or chondritis would have been very costly and likely not successful.

References

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Abstracts

Developing group practices: a management challenge

Richard B. Hays, Leonie Sanderson

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The advantages and disadvantages of forming larger professional practices are often debated. This paper reports an exploration of the issues through three case studies involving clusters of Sydney general medical practitioners who had expressed a desire to amalgamate their solo or small group practices. Their most frequently stated goals were to reduce financial overheads, to improve the range of services offered to their patients and to improve the opportunities for recreational and study leave. Several barriers to successful

amalgamation were identified, and methods of overcoming these were explored. Practices can successfully amalgamate, but only where there is a group of like-minded general practitioners who are willing to invest time to achieve mutually agreed objectives. Amalgamation will not be appropriate in all circumstances. Larger group practices should benefit from the employment of a professional practice manager. These findings may be relevant to veterinary and dental practices.

Control of bovine tuberculosis by vaccination

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The control of bovine tuberculosis remains a significant problem in the United Kingdom, especially in the south west of England where the rising prevalence of the disease is attributed to a reservoir of *Mycobacterium bovis* infection in badgers. The possibility of controlling the disease by the vaccination of cattle has been unpopular with veterinarians largely because of the potential compromise of existing diagnostic tests. However, the vaccination of badgers to reduce the risk of transmission to cattle is an attractive option and has now been

adopted as a potential control strategy. Recent research has led to important advances in the molecular genetics of mycobacteria and in the understanding of protective immune responses. These advances mean that it may be feasible to design and develop effective mycobacterial vaccines. This review summarizes the current understanding of protective immunity against *M. bovis* infection and discusses the possible strategies for the development of vaccines.

Comparison of procedures for sexual cycle attendance in cattle

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Before slaughter, 93 randomly chosen cows were examined in the slaughterhouse. The results of reliability of rectal examination and ultrasonography were compared with the results obtained by dissection of ovaries after slaughter. The reliability of rectal palpation was 19.05% for young corpora lutea and 33.33% in ultrasonography; for diestrus corpora lutea it was 74.42% and 95.35%, for old corpora lutea it was 71.43% or 57.14%, respectively. In 110 ovaries, corpora lutea were absent and were correctly diagnosed in 94.55% with the

use of rectal palpation and in 107 cases or 97.27% with the use of ultrasonography. The reliability of diagnosis of follicles, smaller than 6 mm was 0.25% for rectal palpation and 9.42% for ultrasonography, for follicles from 6-10 mm 43.95% or 82.29%, for follicles from 11-15 mm it was 67.09% or 78.48% and in follicles larger than 15 mm it was 97.30% or 91.89%. For follicles smaller than 10 mm, the reliability of ultrasonography was significantly higher ($P=70.01$), while there was no significant differences for follicles larger than 10 mm.