

# Latin Comparative Pathology Group

## The Latin Subdivision of the CL Davis Foundation

### Diagnostic Exercise

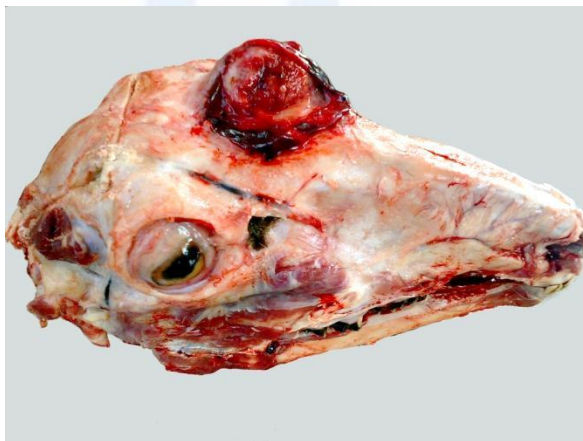
Case #: 36 Month: September Year: 2013

*Answer Sheet*

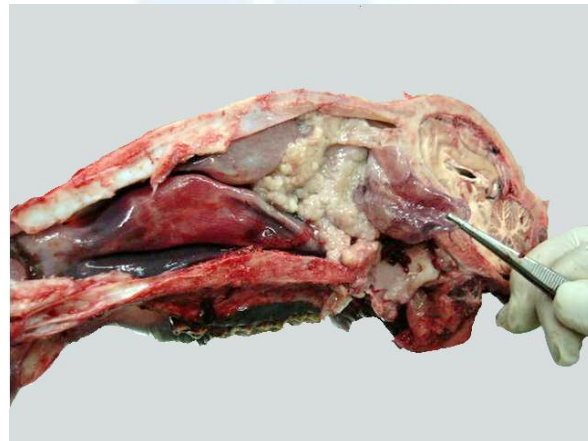
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**Signalment:** Five female sheep (two shown) aged 15-40 months from a mixed flock at the Paphos district, Cyprus, comprised of 300 Chios sheep and 170 local breed goats.

**History/clinical signs:** Facial asymmetry, exophthalmus, progressive inspiratory dyspnea, open mouth breathing, sneezing, snoring and constant seromucous exudation were noted during the initial clinical examination; according to the flock caretakers, the signs were present for the previous 2-3 months.



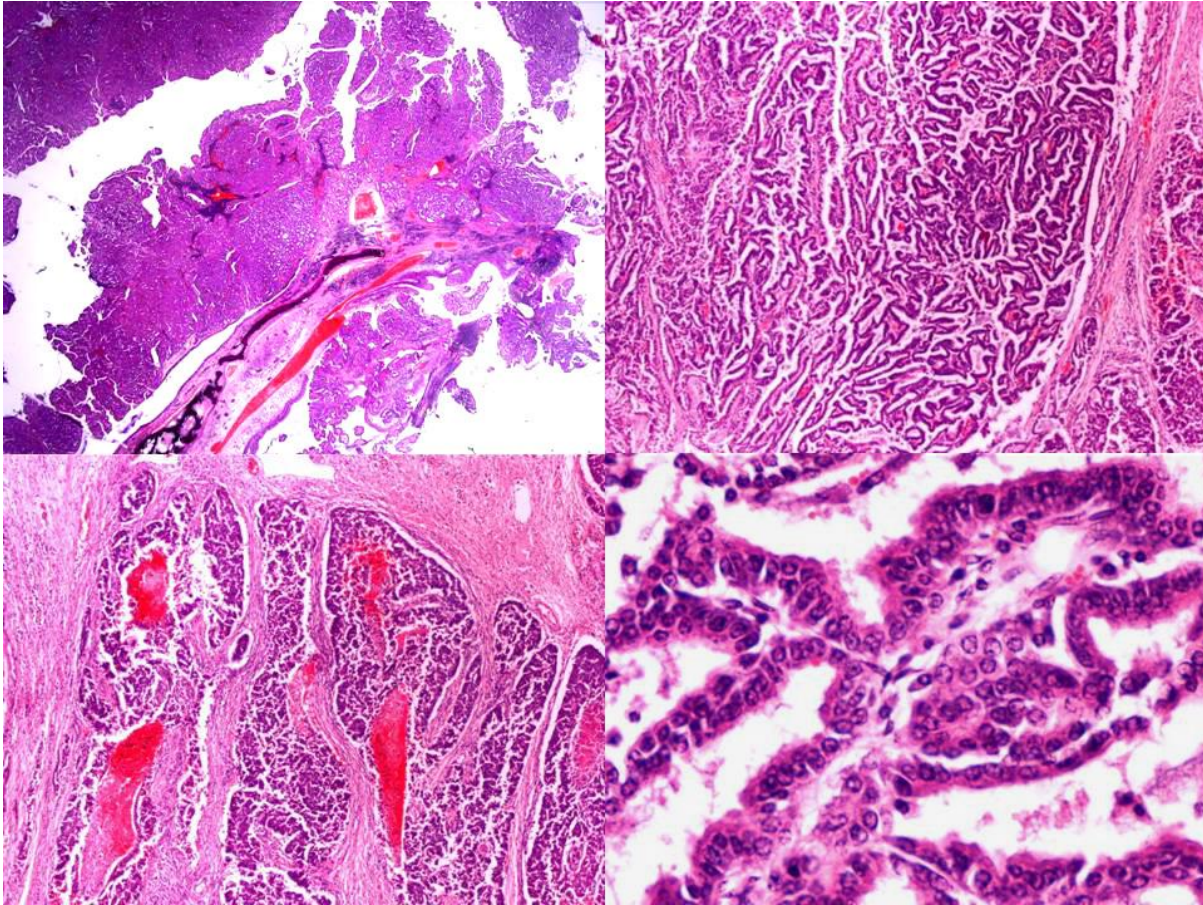
A



B

**Gross morphologic diagnoses:** 1. Enzootic nasal tumor; 2. unilateral severe exophthalmos.

**Histologic findings:** Low-grade adenocarcinoma of the nasal mucosal glands; well-differentiated.



**Etiology:** ENTV-1, Enzootic Nasal Tumor Virus -1.

**Discussion:** ENT is a contagious neoplasm of the nasal mucosal glands and occurs following infection by exogenous oncogenic retroviruses ENTV-1 in sheep or ENTV-2 in goats. ENT appears to be common in countries with substantial small ruminant industries,<sup>1</sup> including Spain, Italy, Greece and Turkey,<sup>2-5</sup> with the exception of Australia and New Zealand. Clinical signs may include nasal discharge, respiratory distress, exophthalmos and facial deformity, eventually leading to weight loss and death.<sup>6</sup> ENTs are uni- or bi-lateral masses centered on the ethmoid region and often occupying adjacent structures, and are histologically classified as adenomas or low-grade adenocarcinomas.<sup>6</sup> Cases in affected flocks can continue to occur over several years.<sup>6</sup> Prevalence in sheep ranges from 0.1 to 15%.<sup>1</sup> ENTV transmission is believed to occur by means of inhalation of aerosolized cell-free particles, but transuterine, perinatal or oral transmission is also possible<sup>7</sup>. As the morbidity of infected sheep remains unclear, asymptomatic carriers should also be suspected of playing an important role in transmission.<sup>8</sup> All sheep in affected flocks should be regarded as constituting a potential ENTV reservoir.<sup>8</sup>

ENT has been diagnosed in sheep and goats in Greece, and in sheep in Cyprus, both by our group.<sup>9-12</sup> Control of the infection mainly requires control of animal to animal transmission,<sup>7</sup> and relies on diagnosis, currently based on the combined evaluation of clinical and gross pathology findings, and histopathologic confirmation.

The contributors of this case would be interested to hear from colleagues that have diagnosed this tumor in sheep or goats in South America or elsewhere (please contact email: ploukopoulos@cahfs.ucdavis.edu).

#### **Acknowledgements:**

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