

DEVELOPMENT OF DIFFERENT ANIMAL MODELS FOR MIDDLE EAST RESPIRATORY SYNDROME-CORONAVIRUS (MERS-COV) INFECTION

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Introduction: Middle East respiratory syndrome-coronavirus (MERS-CoV) emerged in 2012 as a causative agent of severe pneumonia and mortality in man. Further research indicated that an animal reservoir for MERS-CoV did exist (dromedary camels). Since other animal species susceptible to this viral infection cannot be ruled out, the aim of this work was to test four different species for their susceptibility to MERS-CoV and potential as an animal model.

Materials and Methods: A total of 14 pigs, 14 sheep, eight horses (ponies) and eight llamas were inoculated intranasally with 10⁷ TCID₅₀/animal. Four pigs and four sheep were killed on day 2 post inoculation (pi) and four animals of each species were killed on days 4 and 24 pi. A complete necropsy examination was performed on all animals and histopathology and immunohistochemistry was performed on a set of tissues, with emphasis on the respiratory tract. Virus isolation and RT-PCR to detect MERS-CoV was performed on nasal swabs collected at 1, 2, 3, 5, 7, 10, 15 and 26 days pi.

Results: Only llamas showed clinical signs consisting of moderate nostril mucus secretion. Inflammation and necrosis was predominantly seen in the nasal respiratory epithelium of llamas and pigs. Only pigs and llamas had positive virus isolation and RT-PCR results in nasal swabs variably from days 1 to 10.

Conclusions: Pigs and llamas are susceptible to infection with MERS-CoV and might be used as potential models of subclinical infection with this virus.

17 BETA-OESTRADIOL REGULATES OXYTOCIN PRE-PROPEPTIDE mRNA EXPRESSION IN CULTURED BOVINE SATELLITE CELL-DERIVED MYOTUBES

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Introduction: Oestrogens induce oxytocin (OT) expression in several tissues by classical and non-classical signalling. The aim of this study was to evaluate the role of oestrogen receptor- α (OR α) in OT mRNA expression in cultured bovine satellite cell (BSC)-derived myoblasts.

Materials and Methods: BSCs were isolated from the deep digital flexor muscle of adult male cattle. At day 8, differentiation was induced and myotube development was demonstrated by specific immunofluorescence labelling. Myotubes at day 14 were treated with 17 beta-oestradiol (17B-O) with and without OR α antagonist (ICI 182,780) for 24h and mRNA levels of OT pre-propeptide and insulin-like growth factor-1 (IGF1) were measured by qPCR.

Results: OT mRNA level in myotubes was significantly upregulated and this effect was not suppressed by ICI. IGF1 mRNA was mildly upregulated by 17B-O treatment and significantly upregulated in 17B-O+ICI-treated myotubes.

Conclusions: 17B-O induces OT mRNA expression in BSC-derived myotubes, as previously described in bovine skeletal muscle *in vivo*. ICI exerts its antagonist activity by inhibition of the binding of the OR α -ligand complex to DNA, and it has been described as an activator of the orphan G-protein-coupled receptor 30 (GPR30). The IGF1 increase induced by 17B-O with ICI treatment is suggestive of GPR30 involvement. ICI does not influence OT overexpression induced by 17B-O, suggesting that 17B-O may exert its effect on OT transcription through nuclear orphan receptors. This is the first description of *in-vitro* OT mRNA upregulation induced by 17B-O in BSC-derived myotubes suggesting a role for OT in skeletal muscle differentiation.

ENDOMETRIAL LESIONS UNDERLYING FELINE PYOMETRA

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Introduction: Pyometra is an important uterine disease in cats and usually secondary to other uterine lesions, often associated with cystic endometrial disease (cystic endometrial hyperplasia/pyometra complex; CEH-Pyo). However, recent evidence points to the fact that pyometra also accompanies feline endometrial adenocarcinoma (FEA). Failure to properly analyze through histopathology any pyometra case may permit the spread of a more aggressive undetected neoplasia. This work aimed to draw attention to the need for careful histopathological examination of the excised feline genital tract, particularly when areas of increased mural thickness are noted.

Materials and Methods: We evaluated the records of 271 feline ovariectomy (OVH) specimens from laboratory archives within the last 7 years.

Results: In 271 OVH specimens, 125 had lesions. CEH was the most frequent finding (44%), followed by pyometra (30.4%) and FEA (25.4%). Concomitant with pyometra we found FEA in 47.3% of cases. Only in 13.2% of cases pyometra was CEH observed simultaneously.

Conclusions: All OVH specimens should be carefully examined, as lesions of FEA could be masked. FEA is usually described as a rare pathology in cats, but recent reports suggest that it may be more frequent than thought. Age is not an adequate factor for triage, since some FEA cases were described in young animals and pathologists and clinicians should be advised of this.