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Influence of one lung ventilation on respiratory and cardiovascular function in dogs.

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One lung ventilation (OLV) with the use of a double lumen endobronchial tube is a very useful anesthetization technique done for various thoracic surgeries in human medicine. OLV offers the advantages of protecting a normal lung against infectious, tumorous and hemorrhagic lesions. It also allows for easier operations during thoracotomy on cardiovascular surgery or pneumonectomy; thoracentesis and thoracoscopy. However, the application of OLV with the use of a double lumen endobronchial tube in small animal therapy has not been almost used. This study was undertaken to examine the applicability and usefulness of OLV in small animal surgery using dogs.

The cardiovascular and blood gas changes were analysed in dogs that had left OLV during general anesthesia for 60minutes and the following 90minutes under thoracentesis.

The human double lumen endobronchial

tube was able to be applied for the OLV of the dogs. In the OLV group of 6 dogs, mean pulmonary arterial pressure increased gradually to 165% in comparison with the two lung ventilation (TLV) group of 6 dogs at maximum value. Pulmonary vascular resistance increased gradually during OLV, and amounted to 178% in comparison with TLV group. However, the arterial O₂ tension decreased remarkably to 87.6mmHg, including the arterial pH, although arterial CO₂ tension increased during OLV.

In conclusion, dogs with OLV have the disadvantage of the deterioration of respiratory condition in spite of hypoxic pulmonary vasoconstriction. It is therefore necessary that an improvement of the respiratory condition, such as the application of a special ventilation and assisted ventilation for nonventilated lung be done in order for OLV to be safe for application in dogs.