EFFECT OF PERCUTANEOUS TRANSTHORACIC LUNG BIOPSY ON OXIDATIVE METABOLISM IN SHEEP

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Objective: This study aimed at assessing the effect of percutaneous transthoracic lung biopsy on the oxidative metabolism of sheep by measuring the oxidative stress markers superoxide dismutase (SOD), total glutathione (GSH-t), peroxidase (GSH-Px) and thiobarbituric acid reactive substances (TBARS) in the red cells of these animals.

Materials and methods: This study included 20 clinically healthy Santa Ignez sheep (9 males and 11 females), aged between 150 and 190 days and weighing 23-44 kg, that were raised for slaughter in commercial abattoirs. Lung biopsy was performed in animals in standing position restrained by an assistant. Immediately after restraint, a 5-ml blood sample was collected in heparin-containing vacutainer tubes. Other blood samples were similarly drawn from all animals 30 minutes after clinical examination and lung biopsy, performed with semi-automatic needle (Euromed Cateters® - BD 14 X 16G). The seventh right lateral intercostal space, approximately 5 cm above the olecranon, was chosen as the puncture site as it corresponds to the topographic position of the right lung diaphragmatic lobe. The blood samples were stored at 10°C on scale ice in isothermal containers and sent to the Gynecology and Obstetrics Experimental Research Laboratory of Boucatu Medical School - UNESP, Botucatu, São Paulo - Brazil, for the assessment of oxidative stress markers SOD, GSH-t, GSH-Px and TBARS.

Results: Thirty minutes after biopsy, there was a statistically significant reduction in the activities of SOD (p=0.006) and GSH-Px (p=0.001) in the red cells of the animals that underwent the procedure. No significant difference was observed in the red cell concentrations of GSH-t and TBARS after lung biopsy (p>0.05). The tissue aggression caused by the introduction of the biopsy needle triggered and exacerbated inflammatory response and the release of chemical mediators. This sequence of events culminating in oxidative damage, reflected in the decreased SOD and GSH-Px levels observed 30 minutes after biopsy.

Conclusions: As the change in oxidative metabolism induced by the lung biopsy was apparently restrained by the glutathione redox cycle and there was no signs of lipidic peroxidation, the results obtained in the present study suggest that percutaneous transthoracic lung biopsy is a safe procedure that causes no significant changes in oxidative metabolism up to 30 minutes after testing, and may be widely used in routine veterinary practice.