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Service (sector) Retina and Vitreous N° CEP

Comparison of the Accuracy of Diagnosis of Retinopathy of Prematurity between a Resident and a Senior Attending

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Purpose: To investigate if the 25 gauge system for vitrectomy can cause any morphological changes in rabbit's retina induced by air infusion and changes resulting from varying amount of infused air pressure – 25 and 45mmHg. **Methods:** Nine eyes of nine *dutch-belted* rabbits, were used in this study. All animals were treated in accordance of the ARVO statement¹. The animals were anesthetized with Ketamine hydrochloride 35 mg/kg intramuscular and xylazin hydrochloride 5mg/kg intramuscular and Pupils were dilated with tropicamide 0,5%. First a phacoemulsification lens procedure was made to facilitate the posterior access of the rabbit eye for the vitrectomy. Animals were divided into two groups, depending on the pressure used in the fluid-air exchange (25 *versus* 45mmHg). The time of the exchange averaged 1 minute in both groups. After the surgery the animals were killed with an overdose of pentobarbital followed by an immediate enucleation. The eyes were cut circumferentially at the limbus to have access of the posterior part to make a trepanation of 0,8mm of diameter under pappilae (region were the flux were pointed). The specimen were immediately fixed in a solution of glutaraldehyde 2%, and phosphate buffer. The method used to analyze the retinal damage was the scanning electron microscopy in two magnifications (15x, 200x) **Results:** Macroscopic Findings-After the enucleation was observed that 2 of the 9 eyes, one of each group (pressures of 25 mmHg and 45 mmHg), exhibited focal area with an oval shaped retinal break inferiorly of the optic nerve head. That region coincide with the opposite side where the infusion cannula was located during the one minute of fluid-air exchange. All the others areas of the retina in this two eyes and the other 7 eyes appeared with smooth surface, with no macroscopic signs of retinal damage. Scanning Electron Microscopy-This method was able to determine that the area observed macroscopically in those two eyes as well as the other 7 eyes, had a prominent irregularity of the retinal layers located at the side opposite to the infusion cannula. The lesions exhibited in each of the eyes were single and sharply demarcated. Looking from the periphery to the central area of the lesion, it was observed at the peripheral area, the internal limiting membrane exhibiting a strange pattern with fine striae extending from the optic nerve head which culminate with a detachment of the internal limiting membrane exposing the underlying nerve fiber bundles that were easily observed using a higher magnification, indicating a profound damage to that area of the retina. When going more centrally to the lesion it was able to see a focal area with denudation of the nerve fiber layer with a well delimited line between the place with nerve fiber layer and the area damaged. However this great focal anomalies the remaining areas of the retina appeared with normal aspect. **Conclusion:** The air infusion during the 25 gauge vitrectomy can in lead to a focal damage of the retina located at the opposite side of the cannula from direct mechanical stress in rabbit eyes.