

SUMMARY:

Monocular deprivation results in anatomical changes in the visual cortex in favor of the non-deprived eye. Although the retina forms part of the visual pathway, there is scarcity of data on the effect of monocular deprivation on its structure.

The objective of this study was to describe the effects of monocular deprivation on the retinal ganglion cell dendritic features. The study design was quasi-experimental. 30 rabbits (18 experimental, 12 controls) were examined. Monocular deprivation was achieved through unilateral lid suture in the experimental animals. The rabbits were observed for three weeks. Each week, 6 experimental and 3 control animals were euthanized, their retina harvested and processed for light microscopy. Photomicrographs of the retina were taken using a digital camera then entered into FIJI software for analysis. The number of primary branches, terminal branches and dendritic field area among the non-deprived eyes increased by 66.7 % ($p=0.385$), 400 % ($p=0.002$), and 88.4 % ($p=0.523$) respectively. Non-deprived eyes had 114.3% more terminal dendrites ($p=0.002$) compared to controls. Among deprived eyes, all variables measured had a gradual rise in the first two weeks followed by decline with further deprivation. There were no statistically significant differences noted between the deprived and control eyes. Monocular deprivation results in increase in synaptic contacts in the non-deprived eye, with reciprocal changes occurring in the deprived eye.