Introduction:
Current treatments for Glaucoma focus mainly on lowering the increased intraocular pressure (IOP). IOP is considered a major modifiable risk factor for development of optic nerve neuropathy. However, the management success depends on neuroprotection of retinal ganglion cells (RGCs) by preventing damage of RGCs from apoptosis. Brimonidine has been proved protective effects on RGCs (in animal researches with intravitreal injection), but when used in topical application, its neuroprotective activity has not been unequivocally confirmed.

Purpose:
To evaluate the loss of Retinal Nerve Fiber Layer thickness in glaucoma patients treated with brimonidine.

Methods:
A retrospective analysis to assess the OCT-Glaucoma Module results (TD-OCT Stratus; Carl Zeiss Meditec, Inc., Dublin, CA) from 1800 patients from out-patients Ophthalmology Department, Railway Hospital Katowice, Poland through the years 2006-2011. The mean age of patients was 68.62 ± 14.85 years. Statistical analysis was based on the software Statistica 10.0 PL, Statsoft, Poland (U-Mann Whitney test, Spearman correlation test, Bland-Altman analysis).

Results:

In the analyzed group patients with diagnosis of glaucoma, 53 had properly controlled IOP without increasing above 21 mmHg throughout the observation period, in 45 cases incidents of elevated above 21 mmHg IOP was observed.

Conclusions:
In the overall study group brimonidine showed no protective effect on Nerve Fiber Layer, in contrast to patients with well controlled IOP (without rising above 21 mmHg). The potentially neuroprotective effect of brimonidine depends on the occurrence of IOP. The higher than normal IOP will limit the potential neuroprotective effect.