CONTEXT: Migraine is a frequent and disabling chronic neurological condition with complex pathophysiology. Both cigarette smoking and migraine may cause damage to the optic nerve.

OBJECTIVE: The primary objective of this study was to investigate the effect of cigarette smoking on retinal nerve fiber layer (RNFL) thickness in patients with migraine.

MATERIALS AND METHODS: Eighty-four consecutive patients diagnosed with migraine (34 smokers and 50 nonsmokers) and 66 age- and gender-matched healthy non-smoker controls were enrolled for this observational cross-sectional study. RNFL thickness was measured using spectral-domain optical coherence tomography (OCT) and then RNFL thickness in patients with migraine who smoke was compared to nonsmoking patients with migraine and healthy subjects.

RESULTS: The average, superior, nasal and inferior RNFL thicknesses were significantly thinner in patients with migraine compared to the control group (p < 0.001, p = 0.02, p < 0.001 and p = 0.04, respectively). The average and inferior RNFL thicknesses were significantly reduced in smoker patients with migraine compared to the nonsmokers (p = 0.011, p = 0.045, respectively). Nonsmoker patients with migraine had significantly thinner average and nasal RNFL thicknesses than the control group (p = 0.001, p = 0.001, respectively).

CONCLUSION: Cigarette smoking may cause significant RNFL thinning in patients with migraine. OCT may be a feasible technique for determination of smoking-induced ocular damage in patients with migraine.