Optical Coherence Tomography Angiography Measurements in Eyes with Vitreoretinal Surgery

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Short Report

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Abstract

Purpose

To study the retinal detachment (RD) results with the aid of OCTA

Methods

In the present corss-sectionally designed study 11 patients were enrolled. Eyes with retinal detachment surgical procedures served as study group and the fellow eyes without any retinal detachment surgical procedures served as control group.

Results

The mean age of 11 patients was 59.72 ± 9.94 years. The mean BCVA of the study was 0.43 ± 0.31 and mean BCVA of the control group was 0.86 ± 0.23 in decimal ($P=0.01$). The mean IOP of the study group 15.72 ± 1.55 mmHg and the mean IOP of the control group was 16.09 ± 2.17 mmHg ($P=0.656$).

Conclusion

Optical coherence tomography angiography is an important imaging tool to evaluate retinal superficial and deep layer density and area measurements

Background

We aimed to assess and compare the optical coherence tomography angiography (OCTA) meausurements in eyes with vitreoretinal surgical procedures and the fellow eyes without any vitreoretinal surgical procedures.

Materials And Methods

In the present corss-sectionally designed study 11 patients were enrolled. Eyes with retinal detachment surgical procedures served as study group and the fellow eyes without any retinal detachment surgical procedures served as control group. The patients had a detailed ophthalmic examination including best corrected visual acuity (BCVA, decimal), intraocular pressure (IOP) and OCTA measurements. Type of surgeries, duration after the surgery, situation of the lens (phakic or pseudophakic) and presence of the silicone were also evaluated. Pars plana vitrectomy (PPV), scleral buckling surgery (SBS) or combination of PPV and SBS were the surgeries performed for the patients. Superficial foveal density, superficial parafoveal density, superficial superior hemifield density, superficial inferior hemifield density, deep foveal density, deep parafoveal density, deep superior hemifield density, deep inferior hemifield density, foveal avascular zone (FAZ), FAZ perimeter, central retinal thickness (CRT), outer retina flow area and choriocapillaris flow area were the measurements assessed in OCTA. Density measurements were

calculated as percentage (%), area measurements were calculated as mm², and CRT was measured as um.

Results

The mean age of 11 patients was 59.72±9.94 years. The mean BCVA of the study was 0.43±0.31 and mean BCVA of the control group was 0.86±0.23 in decimal (P=0.01). The mean IOP of the study group 15.72±1.55 mmHg and the mean IOP of the control group was 16.09±2.17 mmHg (P=0.656). Only one eye of the study group was phakic (%9.09). This eye had SBS procedure. Two eyes of the control group were pseudophakic (%18.18). Three, 5 and 3 eyes in the study group had PPV, SBS and PPV+SBS procedures, respectively. Only one eye had combination of PPV and SBS was with silicone. This eye had a 19-month duration following the surgery. The mean time duration of the study group was 27.00±26.43 months (2-84 months). The OCTA measurements of the eyes with vitreoretinal surgery and the fellow eyes are shown on table 1.

Table 1. Comparison of mean OCTA measurements of the eyes in the study and control groups

Parameters	Study Group	Control Group	P**
Sfavea (%)	16.07±9.32	18.58±6.55	0.474
Sparafovea (%)	36.67±5.14	45.28±7.14	0.004*
Ssinfhem (%)	36.56±4.99	45.71±6.86	0.002*
Ssuphem (%)	36.75±5.82	44.85±7.50	0.010*
Dfavea (%)	29.19±12.00	34.57±7.31	0.219
Dparafovea (%)	48.76±6.37	49.77±4.57	0.674
Dsinfhem (%)	48.00±6.82	49.82±4.59	0.474
Dsuphem (%)	49.52±6.45	49.71±4.81	0.941
FAZ (mm ²)	0.34±0.19	0.26±0.10	0.247
Perim (mm ²)	2.47±0.83	2.08±0.46	0.193
CRT (um)	274.82±71.73	262.55±31.72	0.609
Floworarea (mm ²)	0.91±0.44	0.73±0.38	0.317
Flowchrcarea (mm ²)	2.03±0.15	1.96±0.24	0.417

**statistical analysis was calculated by independent samples t test, *statistically significant, Sfavea: superficial foveal density, Sparafovea: superficial parafoveal density, Ssinfhem: superficial superior hemifield density, Ssinfhem: superficial inferior hemifield density, Dfavea: deep foveal density, Dparafovea: deep parafoveal density, Dparafovea: deep parafoveal density, Dsuphem: deep superior hemifield density, Dsinfhem: deep inferior hemifield density, FAZ: foveal avascular zone, Perim: FAZ perimeter, CRT: central retinal thickness, Floworarea: outer retina flow area, Flowchrcarea: choriocapillaris flow area

Conclusion

Optical coherence tomography angiography is an important imaging tool to evaluate retinal superficial and deep layer density and area measurements. We did not note any statistically significant changes in FAZ, FAZ perimeter, CRT, outer retinal flow area and choriocapillaris flow area between the study and control group. We also did not observe any significant difference in deep layer density between the groups. However, superficial layers might be significantly affected in eyes had vitreoretinal surgery procedure except for the superficial fovea region.