Purpose: To image choroidal lesions with swept-source optical coherence tomography (SS-OCT) and identify morphologic characteristics associated with optimal visualization.

Methods: Prospective, cross-sectional study. Patients with choroidal melanocytic lesions <3 mm in thickness on B-scan ultrasonography were recruited. All participants underwent color fundus photography (CFP), B-scan ultrasonography, and SS-OCT. Two independent graders assessed the images for degree of pigmentation and various qualitative (e.g. lesion outline, scleral-choroidal interface, image quality) and quantitative parameters (maximum lesion thickness, largest basal diameter). Probability of optimal image quality (optimal: all margins of the lesion well visible; suboptimal: at least one margin not properly imaged; or poor: more than one margin not properly imaged) on SS-OCT was assessed using ordered logistic regression models.

Results: We included 85 choroidal lesions of 82 patients, of which 24 (29%) were classified as optimal image quality, 31 (37%) as suboptimal, and 30 (36%) as poor. The factors associated with optimal image quality were distance closer to the fovea (OR 0.76, p<0.001), posterior pole location (OR 3.87, p=0.05), lower ultrasound thickness (OR 0.44, p=0.04), lighter pigmentation (OR 0.12, p=0.003) and smaller diameter (OR 0.73, p<0.001). In the multi-variable analysis, closer distance to the fovea (OR 0.81, p=0.005), lighter pigmentation (OR 0.11, p=0.01) and smaller diameter (OR 0.76, p=0.006) remained statistically significant.

Conclusion: SS-OCT is useful in imaging most choroidal melanocytic lesions. Image quality is best when the lesion is closer to the fovea, has a smaller diameter and lighter choroidal pigmentation.