Real-world Plaque Brachytherapy Clinical Practices Among Ocular Oncology Study Consortium Treatment Centers

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PURPOSE / OBJECTIVE(s)
- To improve treatment planning for COMS eye plaques.

RESULTS
- Table 1: OOSC Database: Patient and Tumor Characteristics
- Table 2: OOSC Database: Doses to Structures and Margin Size by Institute
- Table 3: Survey Responses

TABLE 1
- The database contained a similar number of males and females as well as left and right eyes. Average height was 4.6mm, and average basal diameter was 7.8mm. More tumors were GEP Class 1.

TABLE 2
- All Institutes utilize Eye Physics Plaque Simulator and image-based planning. Most Institutes order pre-loaded, uniform plaques. Most commonly, the ophthalmologist chooses the plaque size. The prescription dose was generally 85Gy. Variation was seen in dose rate, plaque style, and constraint use.

TABLE 3
- The database contained a similar number of males and females as well as left and right eyes. Average height was 4.6mm, and average basal diameter was 7.8mm. More tumors were GEP Class 1.

REFERENCES / ACKNOWLEDGEMENTS

OOSC Institutions: Duke Eye Center*, Oregon Health and Science University/Casey Eye Institute*, University of Miami/Bascom Palmer Eye Institute*, University of Southern California/USC Roski Eye Institute, Smilow Cancer Center at Yale-New Haven Hospital*, University of Michigan*, Colorado Retina Associates/Rocky Vista University, Retina Specialists of Michigan, and Houston/Blanton Eye Institute at Houston Methodist Hospital*
*participated in treatment practice survey

SUMMARY / CONCLUSION
- There was generally good agreement between calculated doses to critical structures between institutions. Clinical margins were most commonly 2-3mm though margins over 4mm were reported. Higher margins were more common in notched plaques and peripapillary tumors. Margin did not vary with overall plaque size. This study does not aim to recommend any specific practice, simply to retrospectively compare actual patient data between high volume centers.

While there are differences in dosimetric practices, there was overall good agreement among plaque brachytherapy practices at the participating institutions including prescription dose, safety margins, and planning methodology. All institutions responding to the survey utilize Eye Physics Plaque Simulator software to some degree. However, dose-rates vary between institutions as does workflow (plaque style, plaque size selection, loading technique, uniform loading). Improved planning technology may allow for more accurate dose calculations to normal structures and improved tumor dosimetry, thereby minimizing radiation toxicity. Further studies are required to refine uncertainties in planning and determine a minimally effective dose.