**BACKGROUND AND PURPOSE**

Ocular melanomas (OM) are rare but comprise the greatest number of melanomas (3.8%) after skin melanomas (94.8%). In the U.S., an average of 0.8 new cases per million are diagnosed each year, with higher rates among males (7.7 million) than females (5.5 million). Most cases are diagnosed in European-Americans (62.2%) and in the choroid (65%) and ciliary body of the eye (15%). Principle treatment historically involved amputation of the eye (enucleation), but eye-sparing treatments, such as brachytherapy radiation are now being used, especially on smaller tumors.

Our purpose here is to describe the incidence and survival of this rare cancer and to investigate the risk of developing subsequent cancers following diagnosis of a 1st primary ocular melanoma.

**METHODS**

Using SEER/STAT software, we analyzed age-adjusted incidence (IR) rates of malignant ocular melanoma (OM) from 1973-2007 by sex, race (European-American-EA, African-American-AA, Other/Unknown-O/UnK), stage and year of diagnosis group (1973-1984, 1985-1986, 1997-2007). A graph of incidence rates stratified by year of diagnosis and sex, charts of race and primary site percentages and a chart of incidence rates stratified by stage and sex were created in MS Excel from incidence data generated using SEER/STAT.

Median age at diagnosis by sex and race were calculated by using a case-casing dataset of ocular melanomas in SEER/STAT, which was loaded into SAS9 to calculate median age. SAS9 was also used to perform top-tail tests and graphs comparing survival differences by sex and race of 1st primary OM.

5-year relative survival rates (1988-2008) by treatment were generated in SEER*STAT and graphed in Excel. Standardized incidence ratios (SIR) and excess risk were generated in SEERSTROKER of 1st primary OM to evaluate risk of developing a subsequent cancer. Median time in months was calculated from development of 1st primary OM to next eligible cancer. Cancers diagnosed within two months following the 1st primary were considered concurrent cancers and were excluded as a "next eligible cancer" (designated "latency" cancer in SEER/STAT).

**RESULTS AND CONCLUSIONS**

From 1973-2008, there were 4,999 new OM diagnosed with incidence rate (IR) = 6.2 per million. Males (IR: 7.1, CI: 6.9-7.4; 32%) had significantly greater IR than females (IR: 5.5, CI: 5.3-5.7; 45%) and were diagnosed at younger age (male median age=61 vs. female median age=64). Both sexes were primarily diagnosed at local stage. European-Americans (EA) (IR: 7.3, CI 7.1-7.5; 97% including Hispanic) had significantly greater incidence than African-Americans (AA) (IR: 0.5, CI: 0.3-0.7; 7%) and were diagnosed at older ages (median=63 vs AA median=53) (CI: 0.3-0.7; 7%).

All race categories were diagnosed primarily at local stage. When accounting for Hispanic ethnicity, EAs comprised 95.2%, AA 4%, Hispanic 0.6% and Other/Unknown 0.2% of incident OM. IRs significantly decreased over time (1973-1984: 6.9, CI: 6.5-7.2, 1985-1998 & 1998-2008: 6.0, CI: 5.7-6.3).

Males and females had similar survival (p=0.2326) for 1st primary OM (N=4,425), as did EAs and AA (p=0.8221). 5-year survival was similar across year of diagnosis groups, with slightly better survival for cases diagnosed in the most recent period, 1997-2008 (p=0.0855). 5-year relative survival was best for those receiving local resection, which probably reflects smaller tumors. 5-year relative survival was statistically significantly better for those receiving radioactive implants or radioisotopes than those receiving no radiation. Those receiving beam radiation also had better survival than those with no radiation but this was not statistically significant.

**SURVIVAL**

The top 5 Subsequent Cancers (SubCa) in each sex, the highest statistically significant risk of subsequent cancer following ocular melanoma were another ocular melanoma (males: SIR=20.04, 95%CI=8.65-39.49, n=8), (females: SIR=16.20, 95%CI=5.26-37.81, n=5) and skin melanoma (males: SIR=11.18, 95%CI=7.92-15.01, n=28) and bronchus (males: SIR=7.11, 95%CI=4.12-11.75, n=5).

**Incidence, Survival and Risk of Subsequent Primaries in Ocular Melanoma**

Fawn D. Vigneau, JD, MPH1,2, Ron D. Shore, MPH1,2, William O. Quashie, MS1,2, Ann G. Schwartz, PhD, MPH1,2

1) Karmanos Cancer Institute, Detroit, MI, United States 2) Wayne State University School of Medicine, Dept. of Oncology, Detroit, MI, United States

**INCIDENCE**

**SUBSEQUENT CANCER RISK**