

P3.041 Choroidal Metastases in NSCLC: High Prevalence of Oncogenic Drivers in a Single-Center Retrospective Analysis

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INTRODUCTION

- Choroidal metastases (CM) occur in 0.2%–7% of NSCLC cases and have been reported in 8.4% of metastatic *EGFR*-mutant NSCLC [1–2], but the landscape of genomic alterations of NSCLC with CM remains poorly characterized
- CM is a highly morbid metastatic site historically treated by ocular-directed therapies; response to systemic targeted therapy in oncogene-driven NSCLC is not well described.
- We characterized genomic alterations and the prevalence of targetable alterations in patients with CM and compared their clinical and molecular characteristics with those without CM.

METHODS

- We retrospectively identified patients with metastatic NSCLC treated at Columbia University Irving Medical Center from February 2020 through May 2026 who had available NGS data.
- Patients with CM confirmed on ophthalmic evaluation were compared with those without documented CM.
- Targetable alterations were defined as genomic alterations with an FDA-approved targeted therapy in NSCLC.
- Clinical and molecular characteristics were compared using univariate tests and logistic regression adjusted for age, sex, and smoking history.

References

- Shah et al. *Ophthalmology*. 2014;121:352–357.
- Bouchez et al. *BMC Cancer*. 2020;20:1186.

RESULTS

- Of the 240 patients identified, 20 had CM and 220 had no known CM.
- CM was associated with never/light smoking history, while younger age and female sex showed non-significant trends (Table 1).
- Targetable alterations were identified in 70.0% of the CM cohort vs. 47.7% of the non-CM cohort (p=0.056). Patient-level distribution of driver alterations is shown in Figure 1.
- Among those with CM, 50% had CNS metastases. Median PFS was 11.4 months (IQR 4.0-32.6), and median OS was 32.6 months (IQR 12.2-45.3).
- Serial Optos fundus photos from a representative patient with CM regression following treatment with ALK-directed therapy are shown in Figure 2.

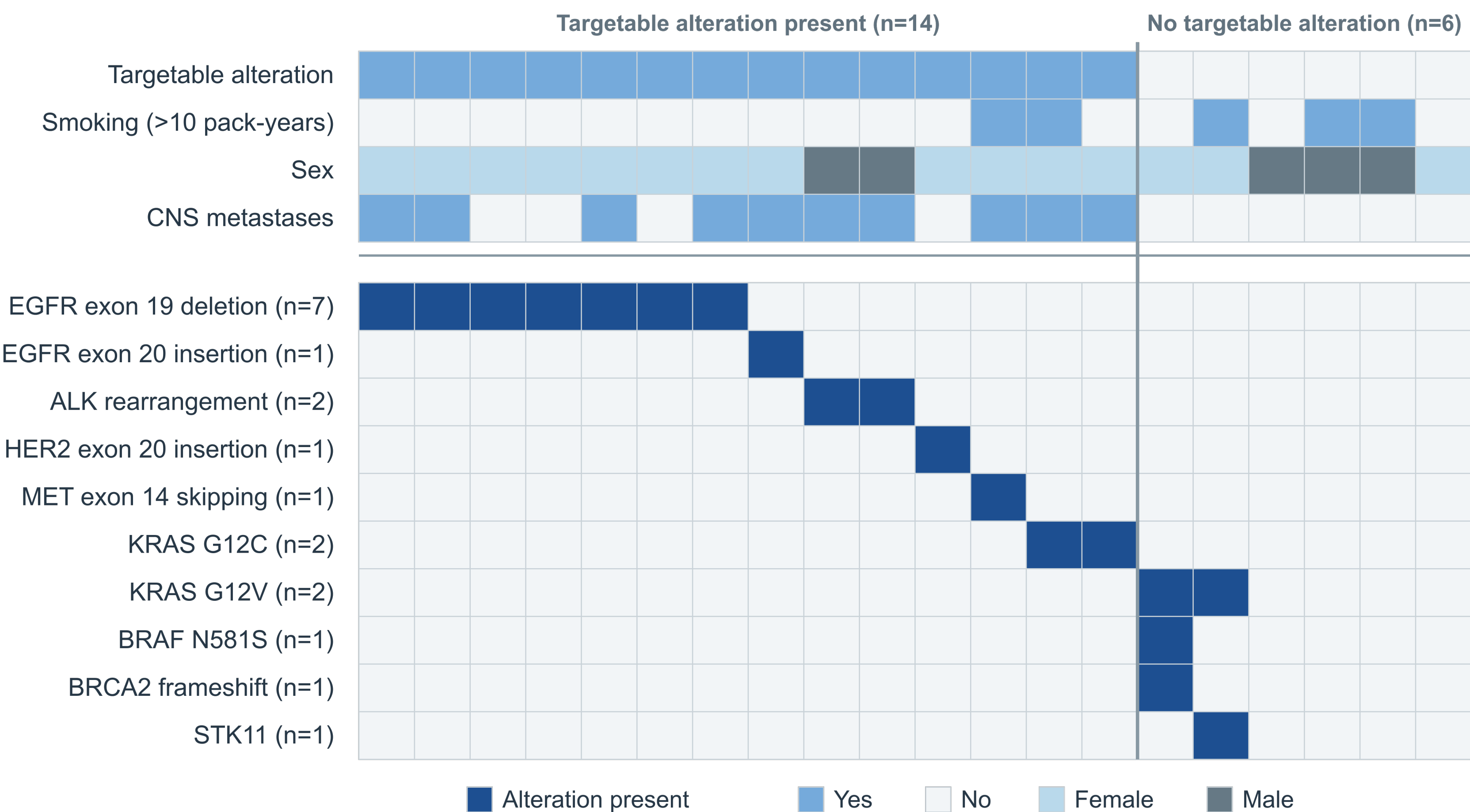


Figure 1. Patient-level distribution of genomic alterations in the choroidal metastasis cohort. Each column represents one patient (n=20). Rows show driver alterations and selected co-alterations; annotation tracks indicate targetable alteration status, smoking history (>10 pack-years), sex, and CNS metastases. CM, choroidal metastasis; CNS, central nervous system.

DISCUSSION AND CONCLUSION

- NSCLC with CM was enriched for never/light smoking**, with non-significant trends toward younger age and female sex.
- Targetable alterations were more prevalent in the CM cohort**, but the association did not reach statistical significance.
- Patients with CM should undergo comprehensive oncologic evaluation, including NGS testing** to identify actionable alterations and guide targeted therapy.
- Larger multicenter studies are needed to confirm associations between CM and targetable alterations and characterize treatment outcomes.

Table 1. Clinical and molecular characteristics by choroidal metastasis status

Characteristic	CM N = 20 ¹	Non-CM N = 220 ¹	P value ²
Age at diagnosis (years)	61.8 (14.0)	67.7 (10.8)	0.063
Sex			0.066
Male	5 (25.0%)	102 (46.4%)	
Female	15 (75.0%)	118 (53.6%)	
Race/ethnicity			0.030
Asian	4 (20.0%)	16 (7.3%)	
Hispanic/Latino	4 (20.0%)	41 (18.6%)	
White	11 (55.0%)	100 (45.5%)	
Other	1 (5.0%)	63 (28.6%)	
Smoking status			0.003
Never/light smoker	15 (75.0%)	89 (40.5%)	
Smoker	5 (25.0%)	131 (59.5%)	
Histology			>0.999
Adenocarcinoma	18 (90.0%)	192 (87.3%)	
Other	2 (10.0%)	28 (12.7%)	
Any targetable alteration	14 (70.0%)	105 (47.7%)	0.056
EGFR mutation	8 (40.0%)	59 (26.8%)	0.208
ALK alteration	2 (10.0%)	12 (5.5%)	0.329
EGFR/ALK/HER2	11 (55.0%)	75 (34.1%)	0.062

CM, choroidal metastases

¹ Mean (SD); n (%).

² Wilcoxon rank-sum test; Pearson's chi-squared test; Fisher's exact test.

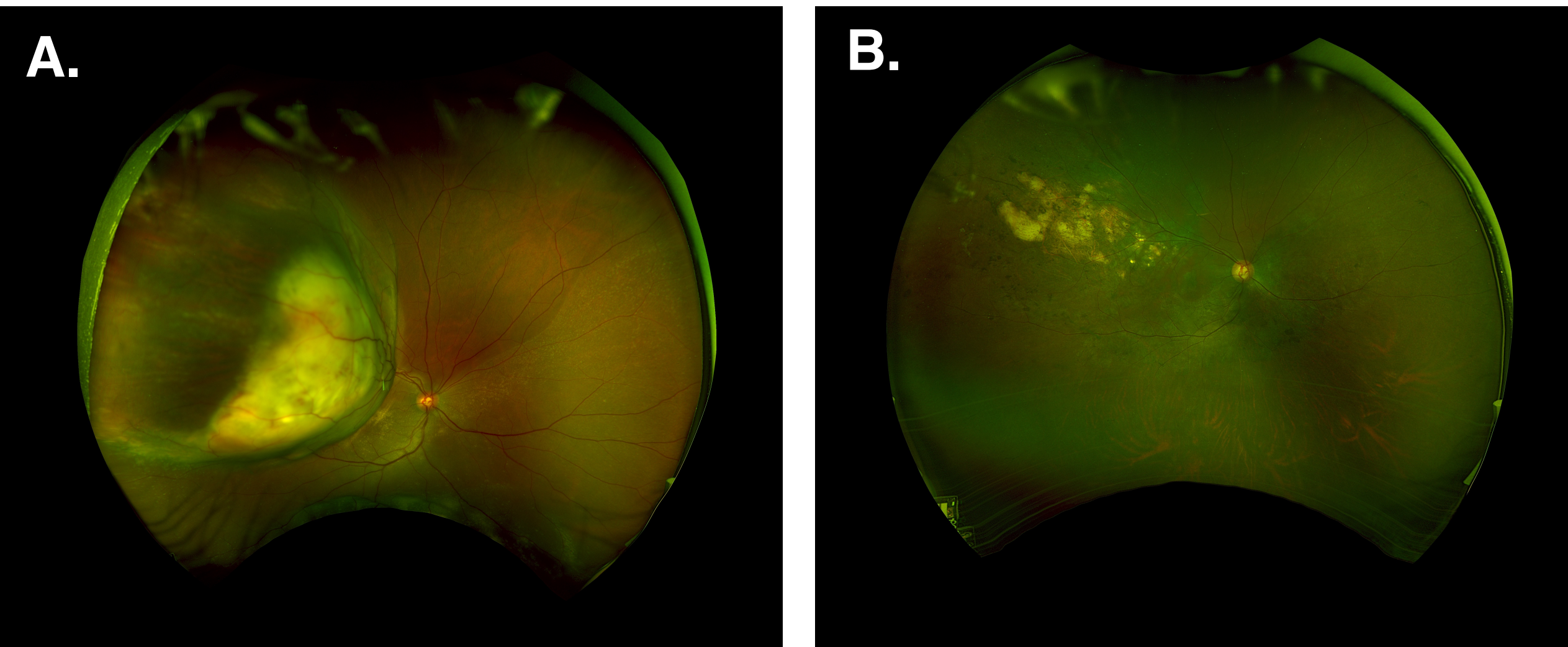


Figure 2. Serial Optos ultra-widefield fundus photographs from a patient with ALK-rearranged NSCLC before systemic therapy (A) and following ALK-directed therapy initiation (B), demonstrating regression of the choroidal metastasis without ocular-directed therapy.

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