Clinical Utility of Encyclopedic Tumor Analysis to Treat Patients with Brain Metastasis in Refractory Cancers

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Conflict of Interest : Datar Cancer Genetics offers commercial services in the area of Oncology.

BACKGROUND

There are limited systemic treatment options patients with solid organ tumors with brain metastases. Such cases are also associated with poor prognosis. We evaluated the efficacy of Encyclopedic Tumor Analysis (ETA)-guided personalized treatments in patients with advanced refractory malignancies having brain metastases. ETA interrogates tumor tissue for gene mutations, gene expression and chemoresistance towards treatment agents. ETA findings are integrated and harmonized to generate ultra-personalized treatment regimens.

APPROACH

Nine (9) patients with advanced refractory solid organ malignancies and brain metastases had previously availed of ETA from the Study Sponsor, based on which they had received personalized treatments. Treatment response was determined retrospectively from radiological scans (PET-CT and brain MRI) done prior to start of treatment (<14 days) and at subsequent follow-up. Findings of most recent follow-up scans were used to determine Objective Response Rate (ORR), Disease Control Rate (DCR) and Progression Free Survival (PFS).

DEMOGRAPHICS OF STUDY POPULATION

Gender	#
Male	1
Female	8
Total	9

Age	(Years)
Minimum	28
Maximum	60
Median	56

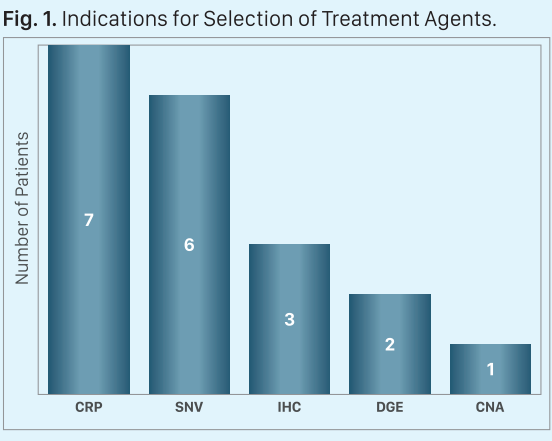
Cancer Type	#
Breast	6
Lung	2
Colon	1

Prior Therapies	#
Systemic	9
Surgery	5
Radiation	6

Prior Therapies	Systemic	Total
Minimum	2	2
Maximum	14	17
Median	3	4

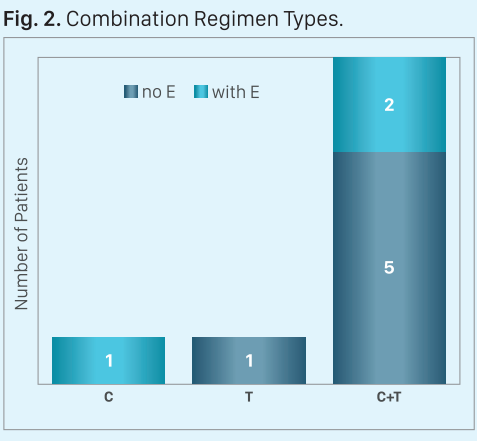
ETA INDICATIONS AND TREATMENT AGENTS

Fig. 1. Indications for Selection of Treatment Agents.



CRP: Chemoresistance Profiling; SNV: Single Nucleotide Variations; IHC: Immunohistochemistry; DGE: Differential Gene Expression; CNA: Copy Number Alterations.

Fig. 2. Combination Regimen Types.



C: Cytotoxic; T: Targeted; E: Endocrine.

Fig. 3. Cytotoxic Treatment Agents.

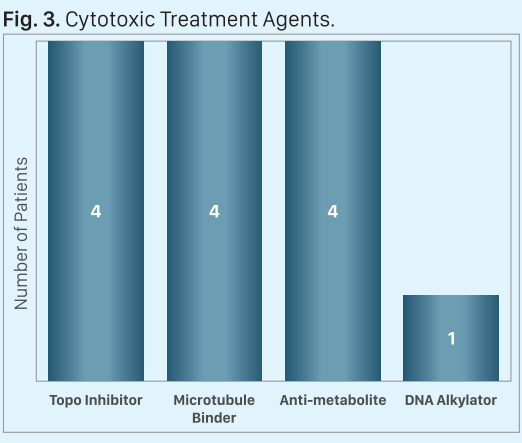
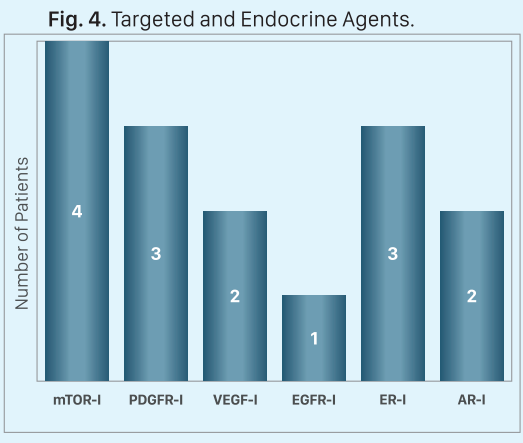


Fig. 4. Targeted and Endocrine Agents.



RESPONSE TO ETA GUIDED TREATMENTS

Fig. 5. Status of Brain Metastases. None of the patients reported increase of or new metastases.

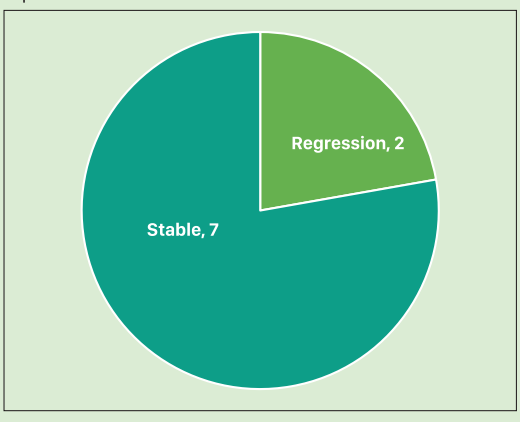


Fig. 6. Response to Treatment. PR was observed in 5 patients and SD was observed in 4 patients.

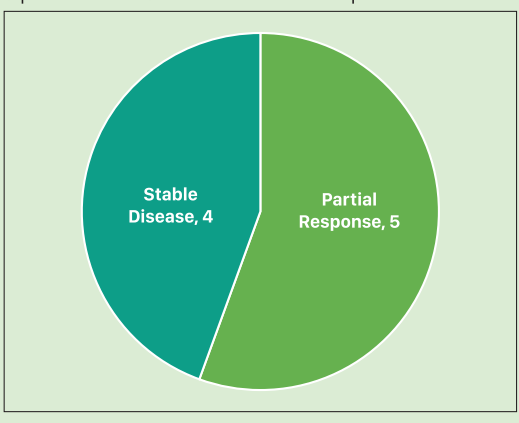


Fig. 7. Objective Response Rate (ORR) and Disease Control Rate (DCR).

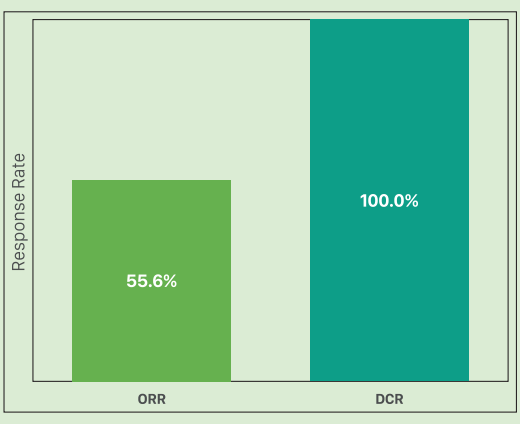
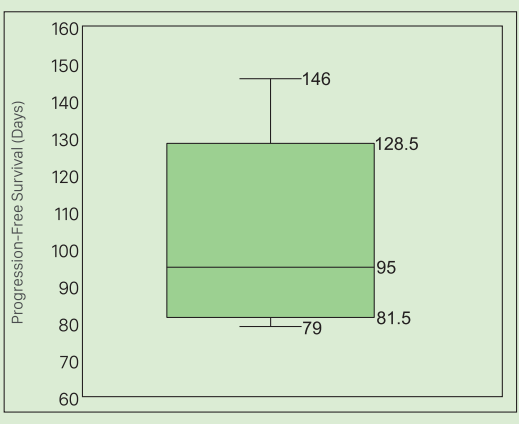


Fig. 8. Progression Free Survival of Patients on ETA-Guided Treatments.



FINDINGS

- ETA identified vulnerabilities in solid organ tumors with brain metastases,
- ETA guided treatments were well tolerated with no Grade III /IV AEs,
- All brain metastases were stable or regressed; increase in size or number of brain metastases were not observed in any patient.

CONCLUSION

ETA-guided combination treatments led to significant (100%) clinical and survival benefits in all patients. ETA offered viable and effective treatment options for such patients.