

Clinical Utility of Encyclopedic Tumor Analysis to Treat Patients with Advanced Refractory Head and Neck Cancers

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Conflict of Interest:

Datar Cancer Genetics Limited offers commercial services in the domain of oncology.

BACKGROUND

- Advanced refractory head and neck squamous cell cancers (HNSCC) pose formidable management challenges.
- Post failure of multiple lines of therapy, patients may be referred for therapy with Immune Checkpoint Inhibitors or for Palliation.

RATIONALE

- Advanced refractory HNSCC have latent vulnerabilities which can be identified by deep interrogation of the tumor interactome, i.e., Encyclopedic Tumor Analysis (ETA).
- ETA evaluates mutations, copy number variations, fusions, gene expression as well as pharmacogenetics for drug safety and in vitro chemoresistance profile of viable tumor derived cells.

- ETA reveals indications for label- and organ-agnostic combination treatment options with high potential for safety and efficacy and low risk of failure or toxicity.

APPROACH

- 31 patients with advanced, refractory HNSCC where disease had progressed following ≥ 2 prior systemic lines,
- Patients received personalized treatments based on ETA,
- Treatment response was determined radiologically to derive Objective Response Rate (ORR), Disease Control Rate (DCR) and Progression Free Survival (PFS)

DEMOGRAPHICS

Table 1. Location of Primary

Subtype	Number
Buccal Mucosa	12
Tongue	8
Nasopharynx	2
Oropharynx	2
Floor of Mouth	1
Gingivobuccal sulcus	1
Lower Alveolus	1
Maxillary Sinus	1
Retromolar Trigone	1
Soft Palate	1
Tonsils	1

Table 2. Gender

Gender	Number
Male	27 (87.1%)
Female	4 (12.9%)
Total	31

Table 3. Age

Age	Number
Minimum	35 years
Maximum	66 years
Median	47 years

Table 4. Grade

Grade	Number
Low	3
Moderate	19
High	7
Unavailable	2

Table 5. Extent of Disease

Gender	Number
Local Infiltration	28
Lymph Node Mets	29
Lung Mets	5
Liver Mets	1
Skeletal Mets	1

Table 7. Prior Therapies.

Prior Treatments	Number
Radiation	24 (77.4%)
Surgery	22 (71.0%)
Systemic	
Cytotoxic	31 (100.0%)
Targeted	8 (25.8%)

ENCYCLOPEDIA TUMOR ANALYSIS

Figure 1. Overview of Analytes and Analyses in ETA.

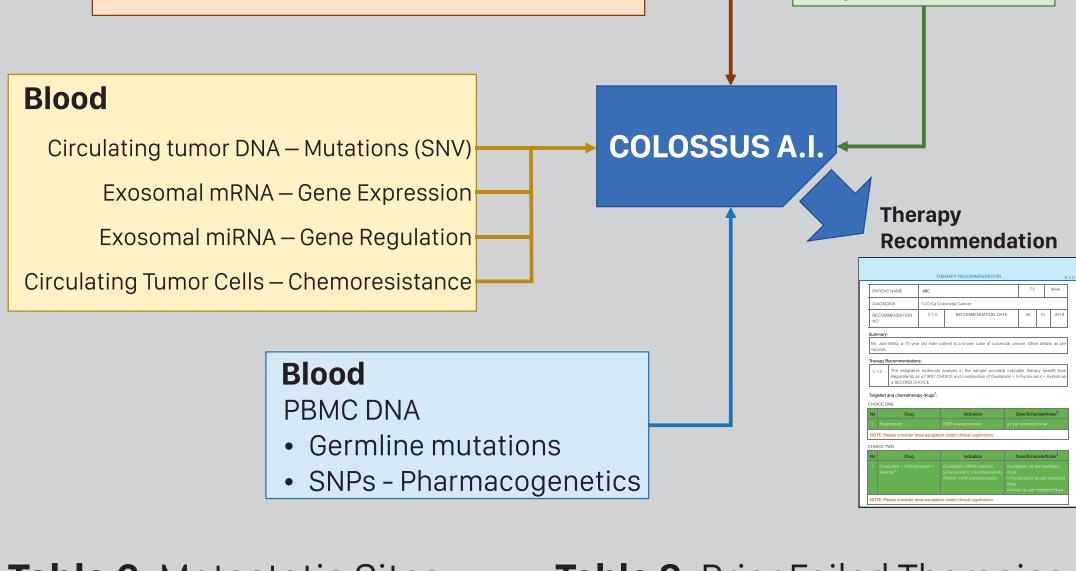


Table 6. Metastatic Sites.

Sites	Number
Minimum	1
Maximum	4
Median	1

Table 8. Prior Failed Therapies.

Prior Lines	Systemic	All
Minimum	1	1
Maximum	4	7
Median	2	4

ETA INDICATIONS AND GUIDED REGIMENS

Figure 2.

Indications for Therapy Selection.

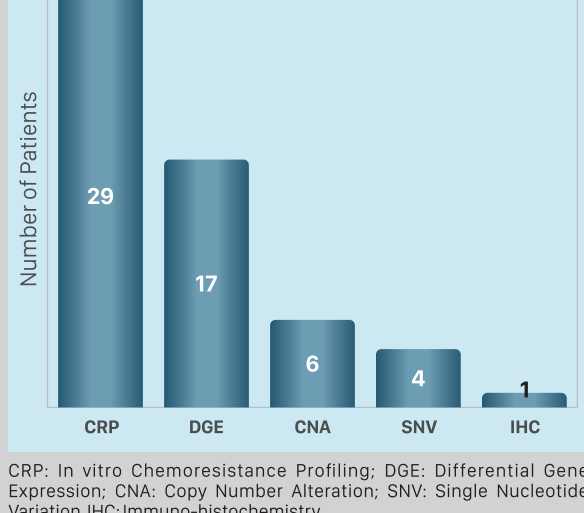
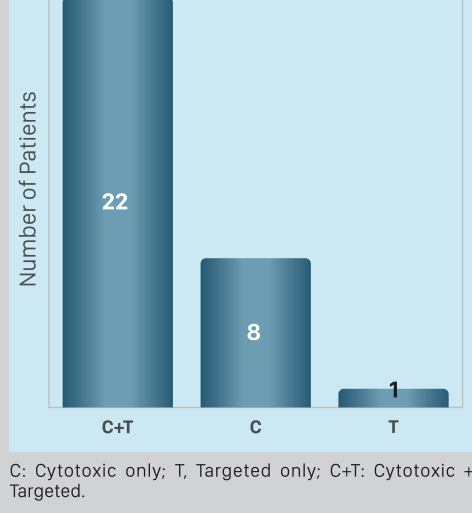


Figure 3.

Combination Regimens.



CRP: In vitro Chemoresistance Profiling; DGE: Differential Gene Expression; CNA: Copy Number Alteration; SNV: Single Nucleotide Variation; IHC: Immuno-histochemistry.

C: Cytotoxic only; T, Targeted only; C+T: Cytotoxic + Targeted.

Figure 4.

Targeted and Endocrine Agents.

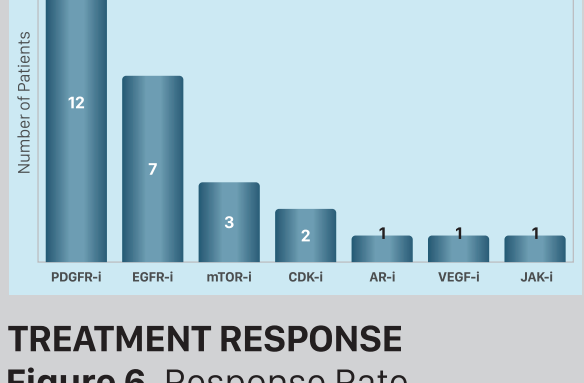
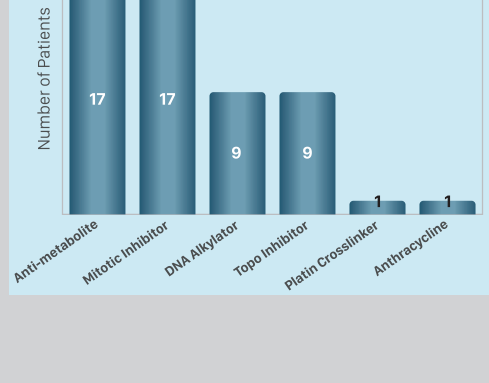


Figure 5.

Cytotoxic Agents.



TREATMENT RESPONSE

Figure 6. Response Rate.

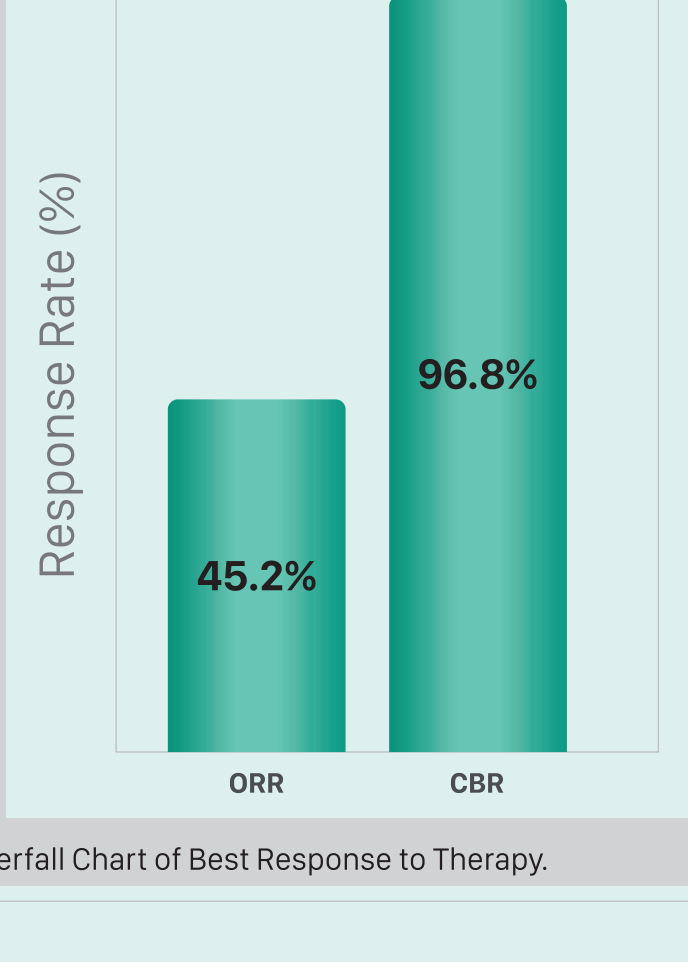


Figure 7. Waterfall Chart of Best Response to Therapy.

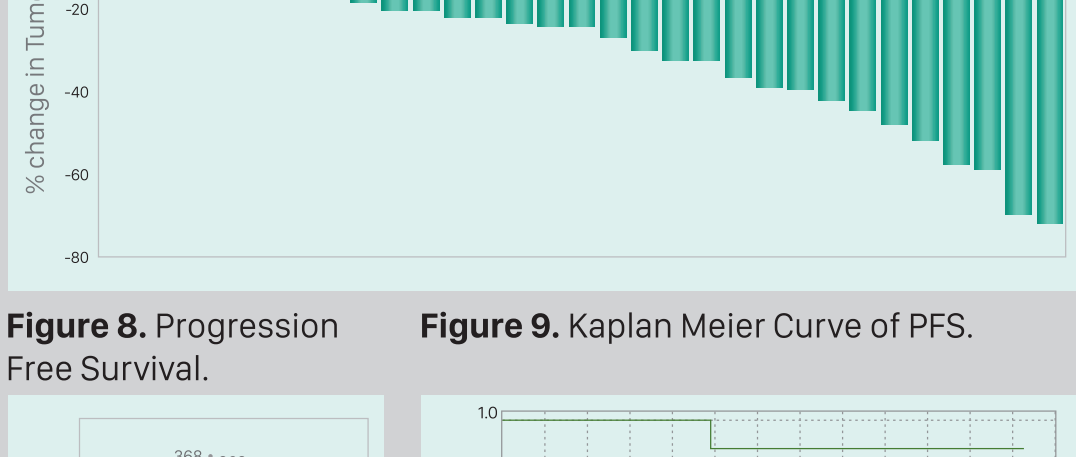


Figure 8. Progression Free Survival.

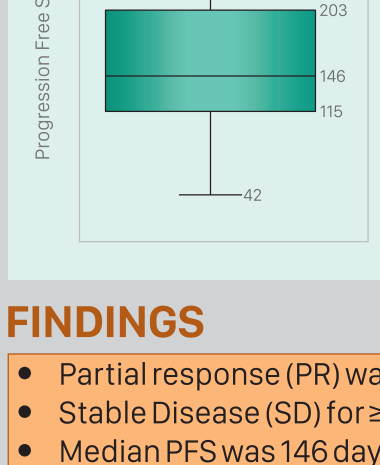
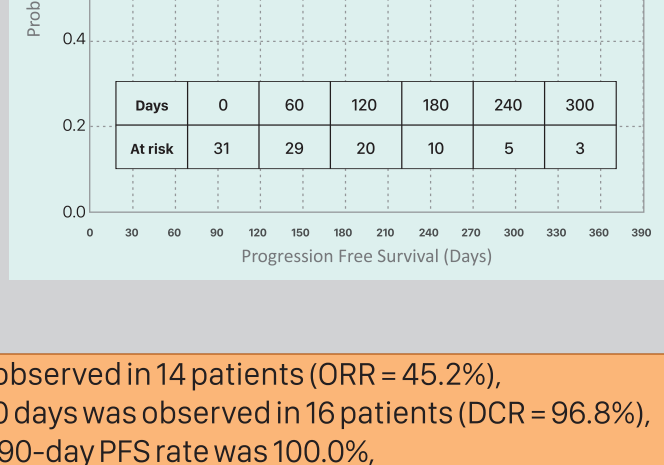


Figure 9. Kaplan Meier Curve of PFS.



FINDINGS

- Partial response (PR) was observed in 14 patients (ORR = 45.2%),
- Stable Disease (SD) for ≥ 60 days was observed in 16 patients (DCR = 96.8%),
- Median PFS was 146 days. 90-day PFS rate was 100.0%,
- No Grade IV therapy-related AE (AEs) or any treatment related deaths.

CONCLUSION

ETA-guided treatments offer meaningful survival benefits and outperformed available alternatives including outcome reported for immune checkpoint inhibitors in this heavily pretreated population of advanced refractory head and neck cancers.