POTENTIAL PREDICTORS OF NODAL METASTASIS IN EARLY TONGUE CANCER FOUND THROUGH APERIO IMAGE ANALYSIS

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Introduction

- Oral cancer is the eleventh most common cancer worldwide (WHO)
- Pakistan has one of the highest incidence of oral cancer in the world
- Approximately 20-30% of patients with early oral tongue carcinoma will have occult neck nodal modal metastasis
- Presently, elective neck dissection remains the only reliable way to predict regional and or distant metastasis
- There has been an influx of studies to determine if biomarkers, both genetic and proteomic of oral cancers diagnosis, prognosis, and metastatic potential

Experimental Aim

Signature proteins will constitute new markers for predicted of nodal metastasis in the form of potential biomarker panel in SCCOT

Methods

Retrospective analysis was performed in a double-blind manner on tissues microarray (5 cores/patient) created from paraffin-embedded specimens from 50 patients with well documented clinical history of the disease. A subset of 20 different proteins were elected as potential biomarkers of metastasis based on published literature on SCCOT and analyzed through immunohistochemistry. Three proteins, E-cadherin, Podoplanin, and Microglobulin were found as possible predicators of metastasis. These findings were validated using Aperio image analysis software.

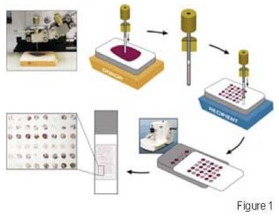
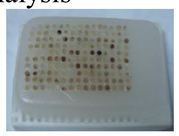
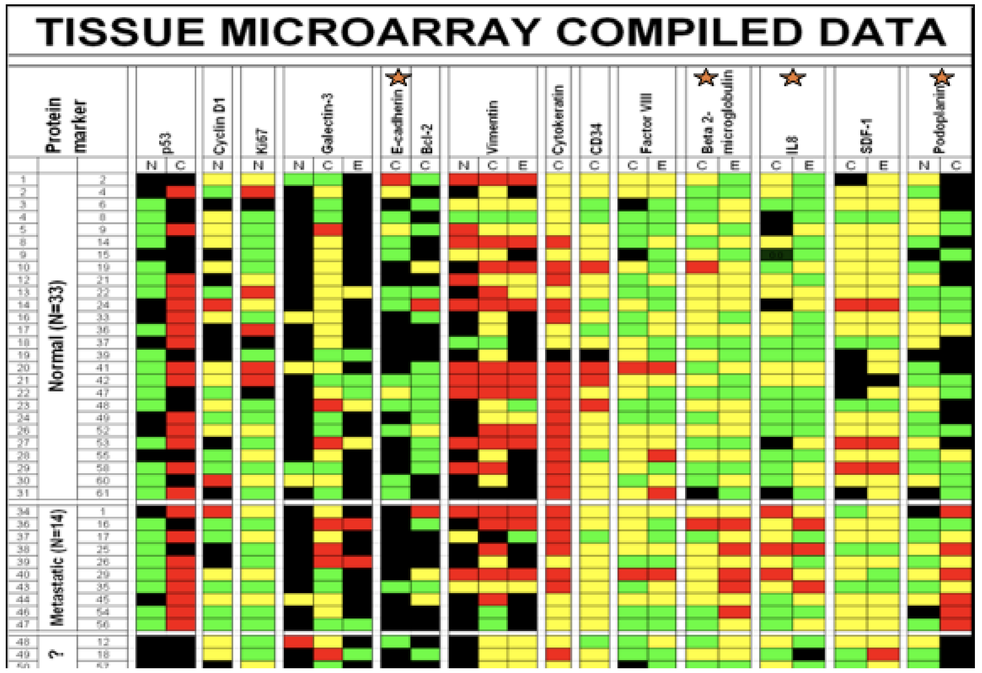


Figure 1



TMA-1

A tissue microarray was used to analyze the samples. Multiple cores from each patient sample was placed on a slide glass and analyzed one time instead of individually.



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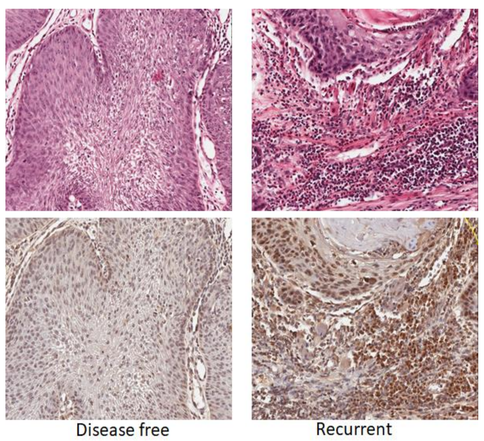
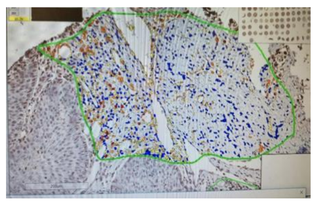
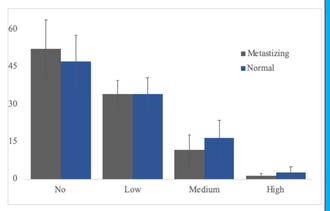
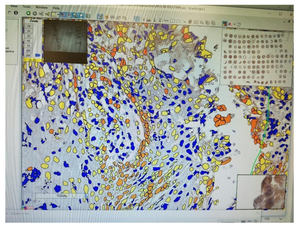
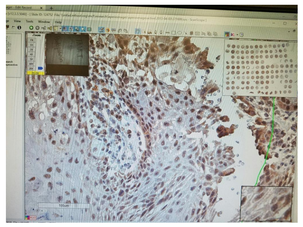
Podoplanin results were not confirmed through Aperio analysis





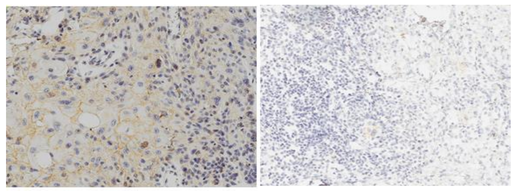


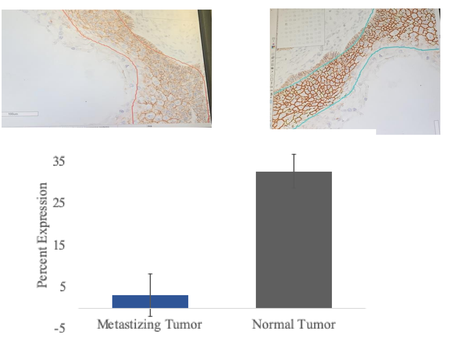




After Aperio analysis, it can be shown by that graph that there is no significance to support any conclusion that podoplanin is a biomarker for oral cancer. Further research is needed to develop new significant findings.

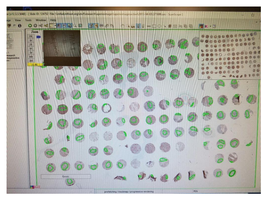
Aperio analysis confirms absence of e-cadherin as potential marker for recurrent disease

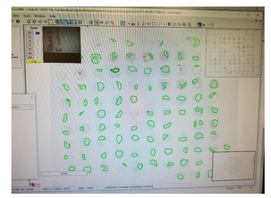




The graph above depicts the levels of E-Cadherin of the normal vs. metastasized cells. Metastasized cells show lower levels of E-Cadherin in comparison to the normal cells and suggest E-Cadherin as a possible biomarker for oral cancer.

Importance of area selection in Aperio analysis





- Data review of Podoplanin revealed incorrect section choices. Need to rescore by Aperio using correct area matching tumor tissue histology results.
- E-cadherin data analysis confirmed its importance in maintaining normal behavior of cells through cell-cell and cell-matrix interactions.

Future Directions

Need to confirm analyses for Beta 2 microglobulin and repeat Podoplanin analysis.

Clinical Relevance

These results can help in translating these markers to clinical practice in order to examine how the disease progresses.