



Association Between Changes in Circulating Tumor DNA and Post-Ablation Metastases in Colorectal Cancer & Liver Tumors

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Objective

The purpose of my project was to establish an association between changes in circulating tumor DNA and the formation of new liver tumors after percutaneous microwave ablation.

Background

Colorectal cancer-related deaths often result from its spread to the liver, affecting 25-30% of patients. To combat this, percutaneous microwave ablation offers a minimally invasive procedure to remove liver metastases. However, over 60% of patients develop new tumors within the liver after ablation. Early detection could optimize treatment timing for the best outcome.

Study Population

- total of 390 cases
- Cases were from January 1, 2016—December 31, 2021
- Cases with biomarker testing available for at least 45 days before and after ablation.
- Cases that showed progression within 6 months after ablation.

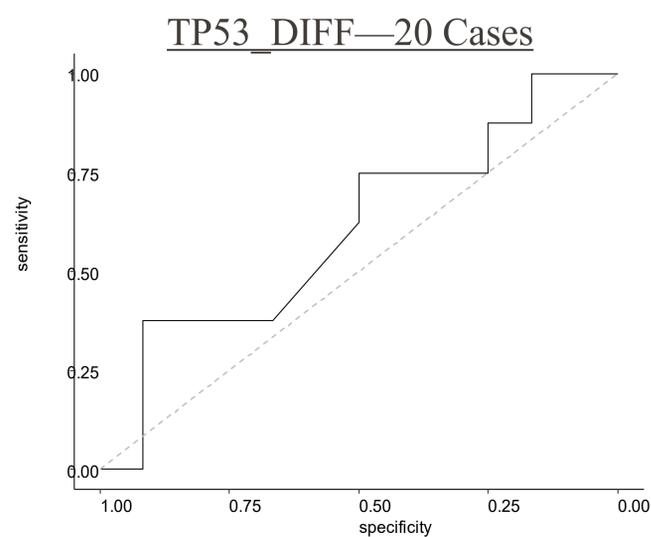
**for each biomarker

Tumor Biomarkers

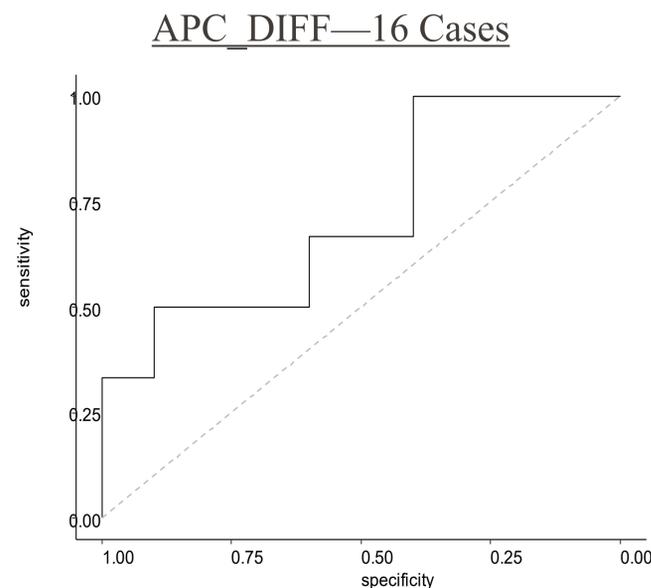
- o CEA
- o CA19-9

Circulating Tumor DNA

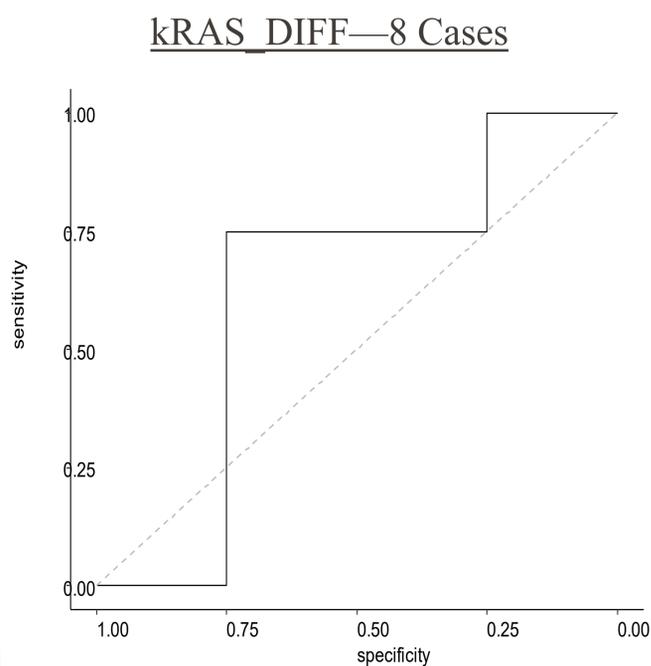
- o TP53
- o kRAS
- o APC



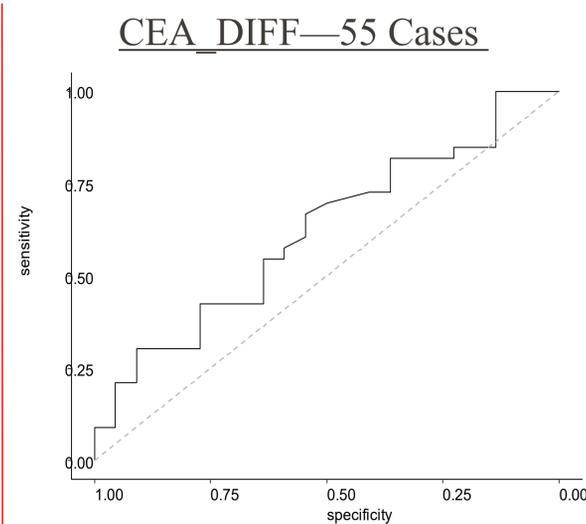
- Wilcoxon Test: $p=0.4619$
- AUC: 0.6042



- Wilcoxon Test: $p=0.1748$
- AUC: 0.7167

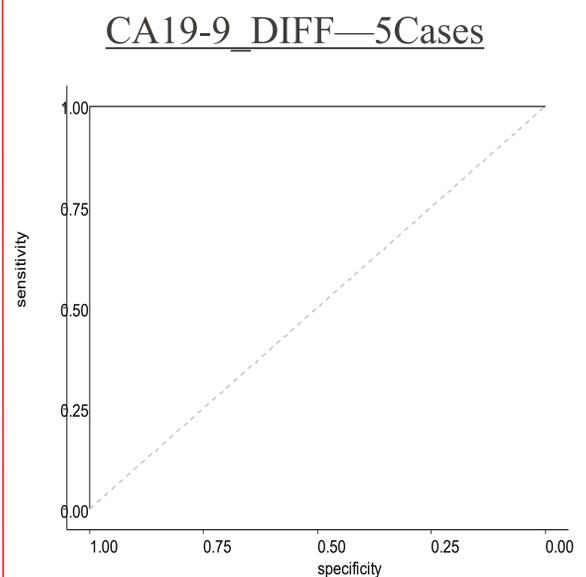


- Wilcoxon Test: $p=0.6857$
- AUC: 0.625



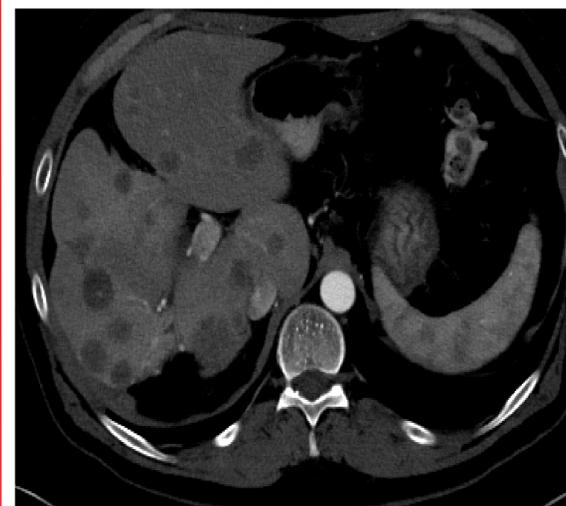
- Wilcoxon test: $p=0.1418$
- AUC: 0.6185

Non-Conclusive Data

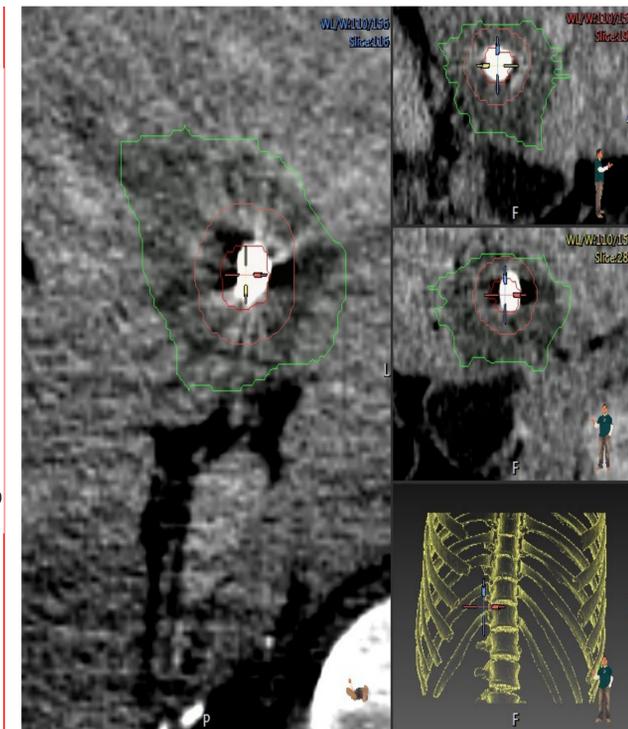


- Wilcoxon test: $p=0.2$
- AUC: 1

Interesting Findings



- Patient had a CEA result of 3387.
- Image shows many metastases in liver post ablation



Conclusions

- In conclusion, the tumor biomarker APC had better results than any other biomarker.
- kRAS was slightly better than the other biomarkers outside of APC. However, there were only 8 cases which is not enough to make a strong precise analysis.
- My preliminary findings indicate biomarkers APC and kRAS show promise for further study. Their higher numbers on the ROC curve suggest they may be linked to post-ablation metastases. This study opens avenues for future research, where we can explore if an increase in these biomarkers directly relates to new metastases and identify the ideal time for ablation.

Acknowledgements

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References

- 1) Lin.Y, Paolucci. I, Odisio. B, Brock.K. Image-Guided Ablation for Colorectal Liver Metastasis: Principles, Current Evidence, and the Path Forward 2021