



# Effect of Will Rogers Phenomenon: Expanding Theranostics Beyond Oncology and Improving Outcomes with Multimodality Therapies

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## BACKGROUND

Referred to as the Will Rogers phenomenon, stage migration was first described by Feinstein et al. in 1985. New diagnostic imaging technologies have served a permissive role in identifying previously silent metastases. Patients who were shifted to a higher stage due to new diagnostic imaging technologies experienced better outcomes compared to patients who were stage defined by the older imaging technologies.

## TEACHING POINTS

1. To revisit Will Rogers Phenomenon and Stage Migration in Theranostics
2. To discuss evolving theranostics beyond oncology
3. To review emerging diagnostic and therapeutic radioligands in oncology, neurology, infection and precision medicine

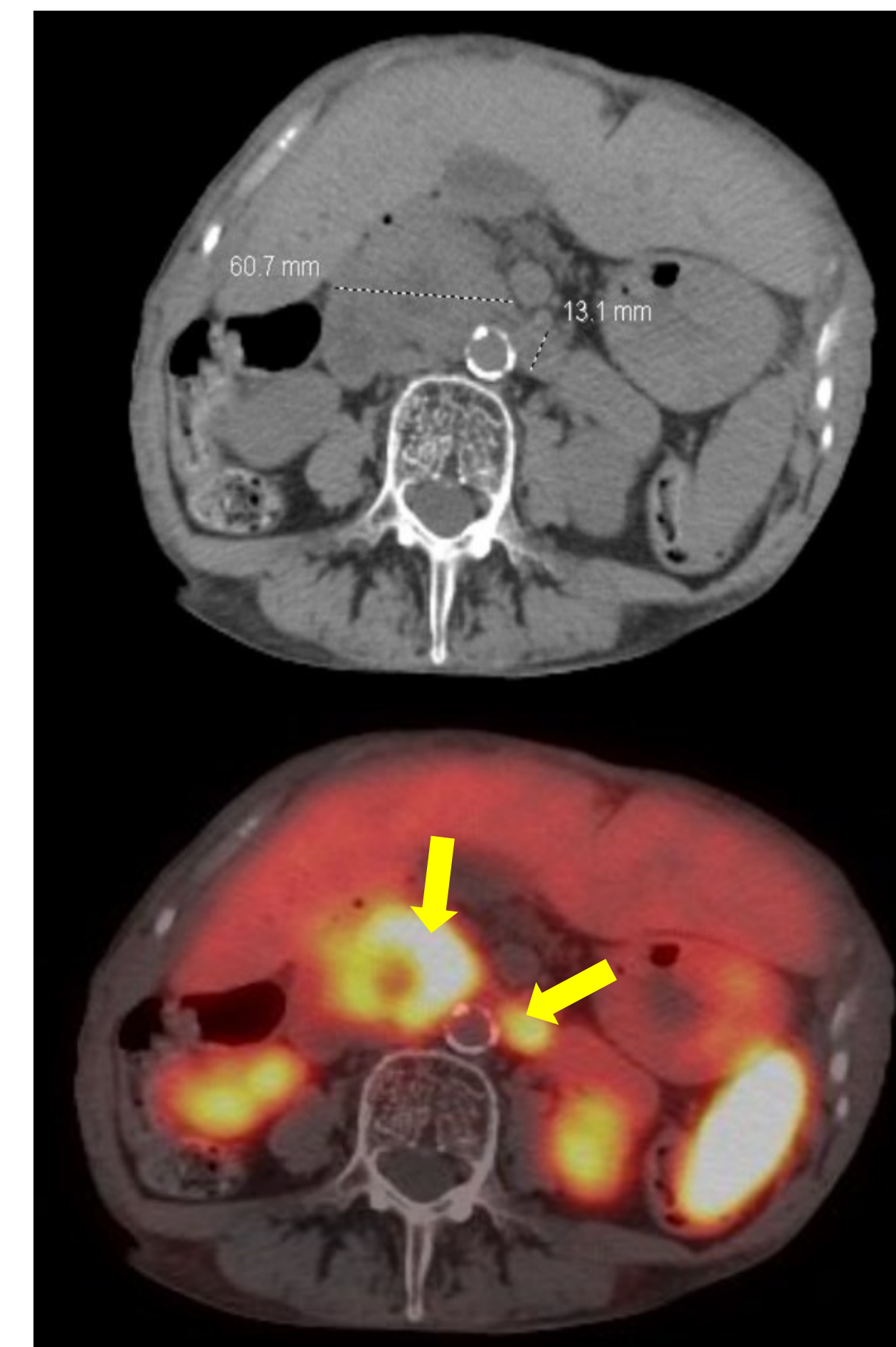
## METHODS

- Databases ScienceDirect, Google Scholar, and PubMed, articles and cases were used for the literature search.
- Key words: “Will Rogers Phenomenon,” “theranostics,” and “stage migration” were included in the literature review.
- Patients from an academic tertiary hospital were included in the discussion.

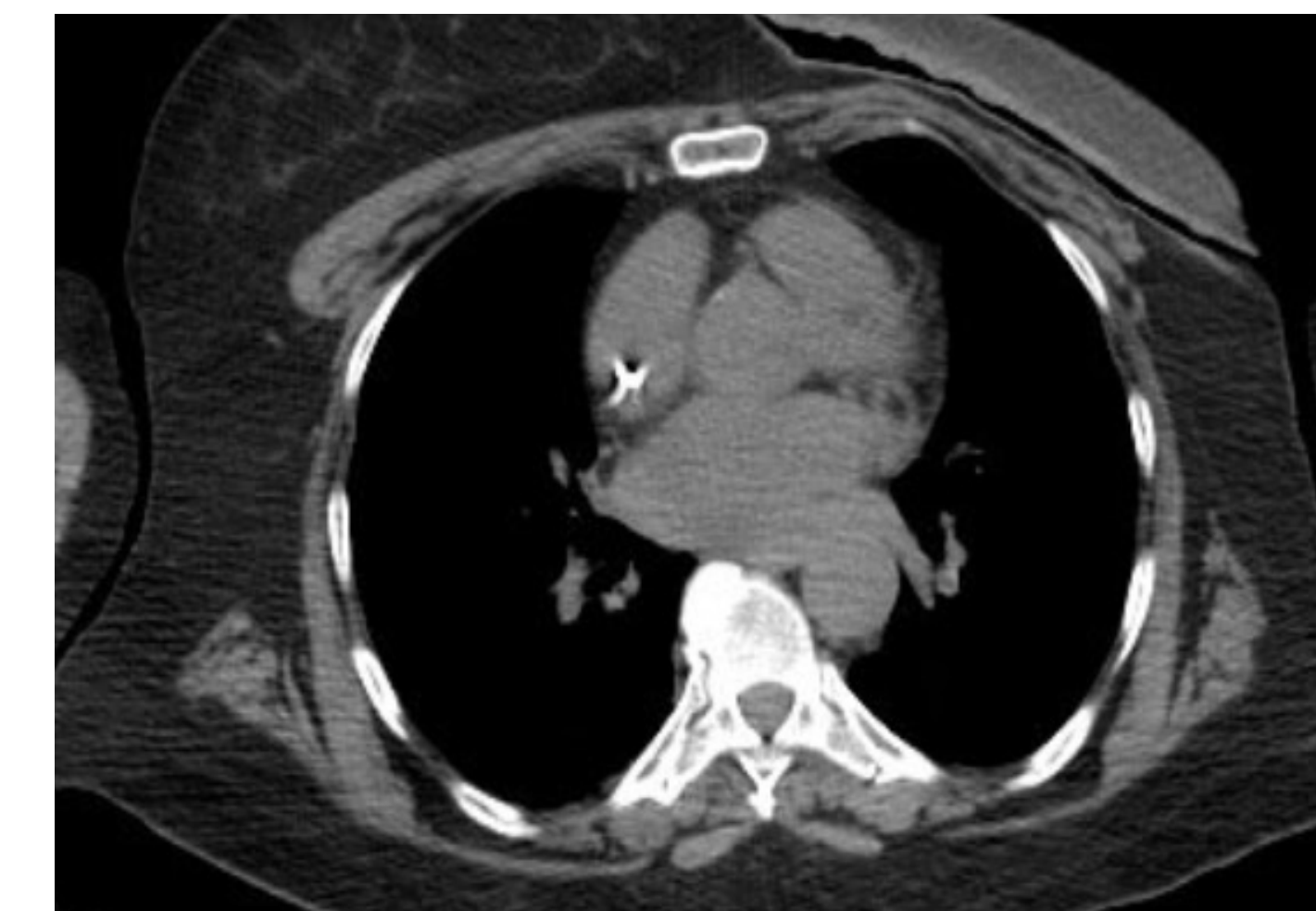
## RESULTS

- In addition to targeting PSMA for prostate cancer and DOTA for NET, **18F-fluoroestradiol** has been approved to select estrogen receptor-positive breast cancer patients for estrogen receptor-targeted therapies.
- Rapidly evolving beyond oncologic imaging and therapy, Theranostic applications can be found in neurology, specifically **β-amyloid imaging** and **lecanemab antibody** therapy.
- Theranostics has contributed to other fields including immunology as well as neuropsychology with **dopamine transporter imaging** and dopaminergic therapeutics being investigated for the treatment of Parkinsonian syndromes.

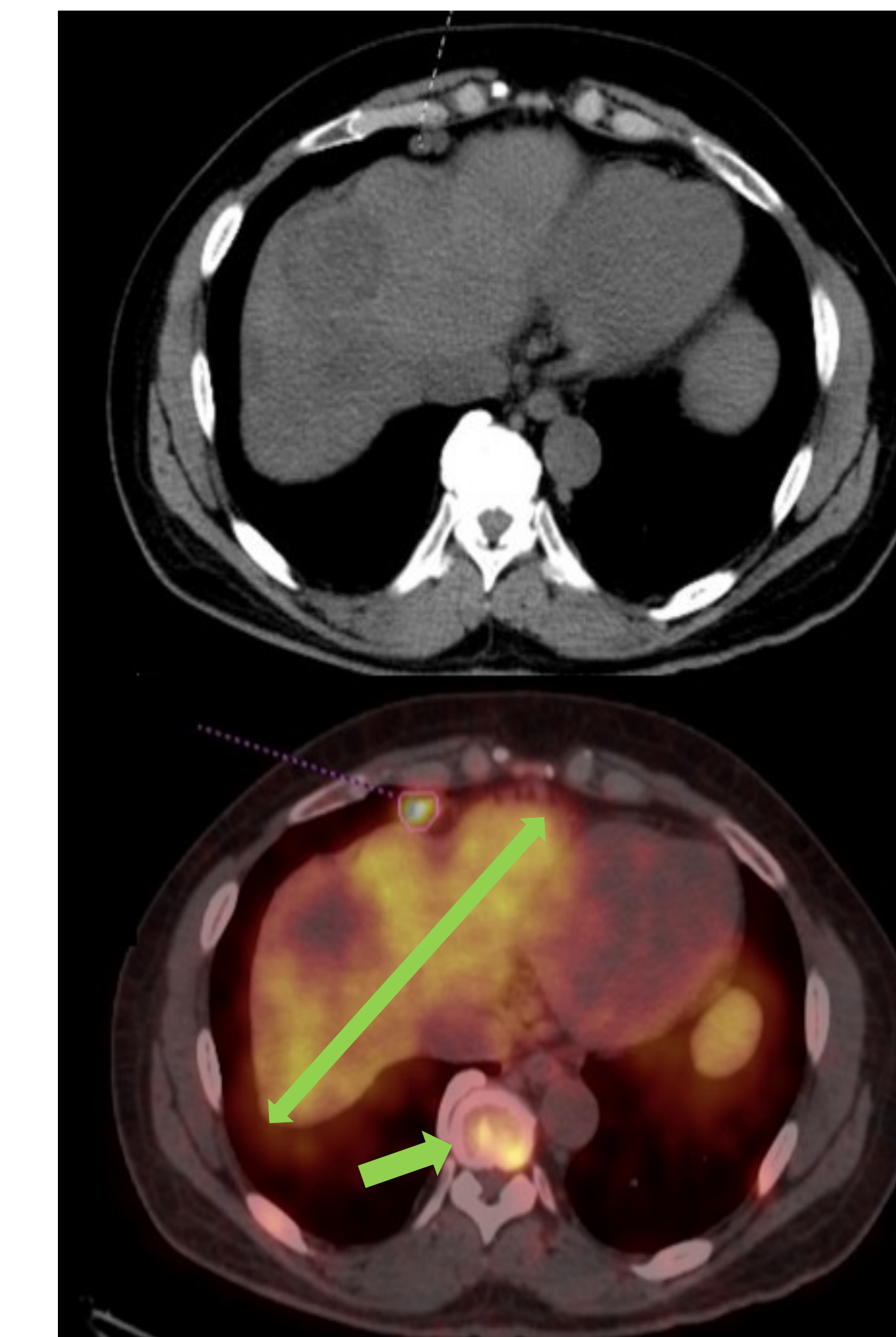
## IMAGES



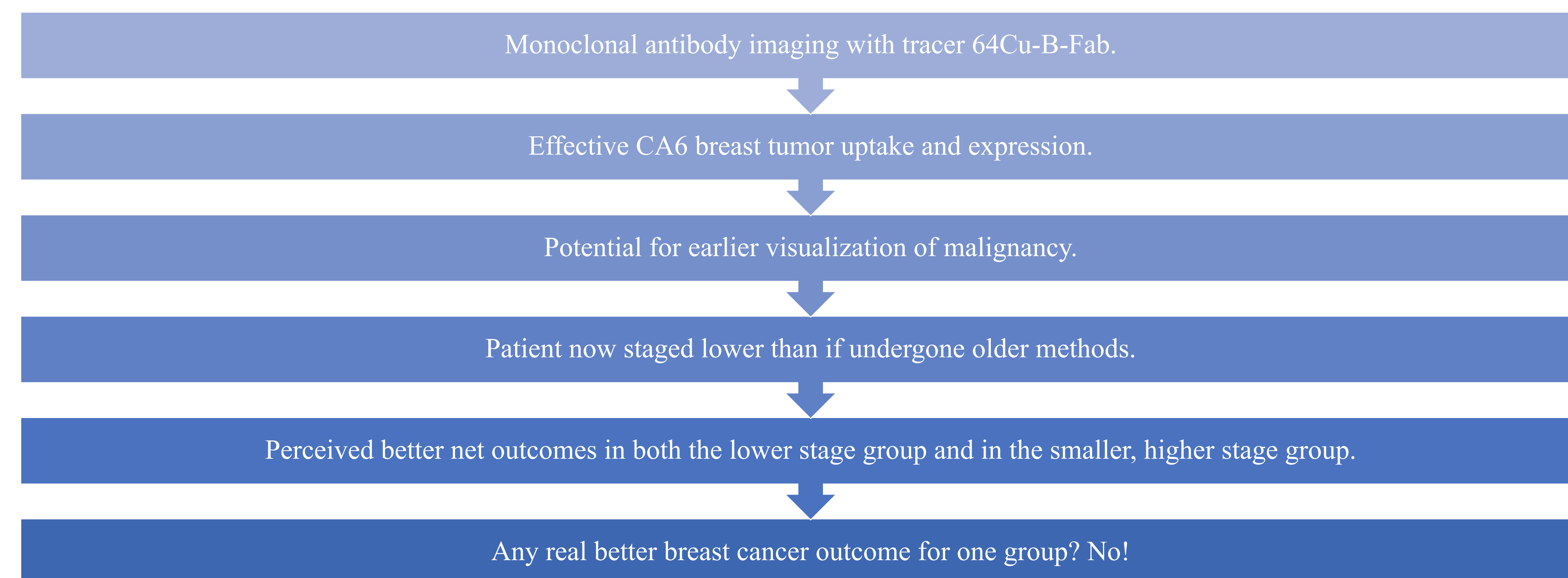
A) Case 1: Cu64-Dotatate CT and PET for neuroendocrine tumor of pancreatic head and metastasis to the left para-aortic lymph node detected.



B) Case 2: 68Ga DOTA CT and PET/CT axial lung view for metastatic neuroendocrine tumor.



C) Case 3: 68Ga DOTA CT and PET/CT for perihepatic NET, treated with Lutathera (Lu177 DOTA)



D) Summary of Moek et al. results for antibody-related therapeutics – <sup>64</sup>Cu-B-Fab – in the treatment of breast cancer patients.

## CONCLUSION

The diagnostic and therapeutic applications of Theranostics are rapidly expanding beyond radioligand therapies to include external-beam radiotherapy, medical therapy, and cellular immune therapy. As new Theranostic technologies provide earlier detection and treatment of oncologic and non-oncologic diseases, the Will Rogers Phenomenon will grow more applicable.

## REFERENCES

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