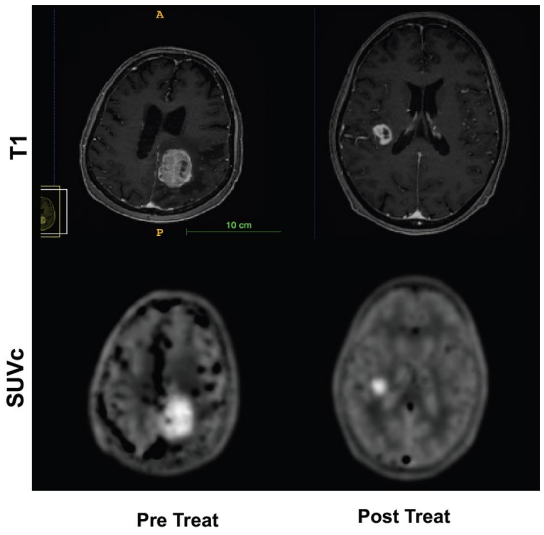
ASX ANNOUNCEMENT
23 NOVEMBER 2022

Pivalate's additional data released from positive Phase II imaging trial in brain metastases

Sydney, Australia – November 23, 2022 – Radiopharm Theranostics (ASX:RAD), a developer of a world-class platform of radiopharmaceutical products for both diagnostic and therapeutic uses, is pleased to announce that Imperial College London has released additional data related to the F-18 Pivalate (RAD 101) Phase 2a imaging trial in patients with brain metastases.

High contrast images (see below) were seen at 60 minutes after radiotracer injection. The images showed the maximum standardised uptake within lesions compared to the mean differed in a statistically significant manner (Mean ± SEM of 1.54 ± 0.11 vs 0.47 ± 0.04 ($p < 0.0001$).



The calculated Tumour-to-Background ratio ranged from 1.73 to 6.07 (Mean ± SEM of 3.85 ± 0.33) which supports the assertion of high image contrast in patients regardless of the origin of the primary cancer.

The initial data (announced to the ASX 18 October 2022) showed significant tumour uptake that was consistent and independent from the tumour origin, and also indicated that Pivalate can be used to monitor cerebral metastases.

"The new data released shows the additional benefit of PET scan with F-18 Pivalate in detecting the metabolic activity in the brain metastases" said Riccardo Canevari, CEO and Managing Director of Radiopharm Theranostics. "This quality image is a promising indication that the tracer can be used to monitor brain metastases, which is yet another positive step for the potential of this technology for Radiopharm."

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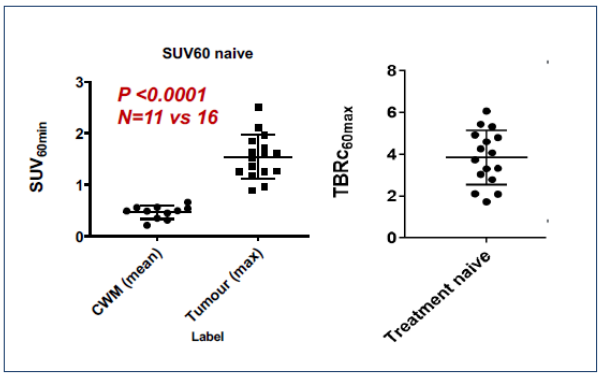

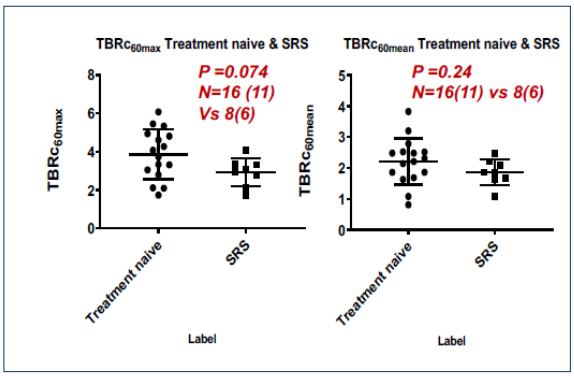

Authorised on behalf of the Radiopharm Theranostics board of directors by Executive Chairman Paul Hopper.

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Imperial College London

#135:18F-Fluoropivalate PET/MRI: imaging of treatment naïve patients and patients treated with radiosurgery

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Background

20-40% of patients with cancer will develop metastatic cancer to the brain

The brain niche imposes metabolic constraints on tumour cells that metastasise to the organ involving utilisation of short chain fatty acids (SCFAs) in the presence of glucose

^{18}F-fluoropivalate (FPIA), for imaging SCFA transcellular flux showed high uptake in orthotopic human brain tumours in mice

In humans, FPIA had favourable dosimetry - 0.0154 mSv/MBq.

We hypothesised that FPIA uptake will be high in metastases regardless of primary origin of primary tumour and will decrease with treatment.

In this interim analysis we ask,

a) whether FPIA uptake is higher over background in cerebral metastases, and

b) whether Stereotactic Radiosurgery (SRS) impacts FPIA uptake at early time points (4-8 weeks) when changes in imaging outcome can influence further patient management.

Methods

FPIA-PET/MRI was performed in patients with one or more cerebral metastases from different primary tumours.

There were two cohorts of patients, treatment naïve and SRS treated (4-8 weeks post treatment).

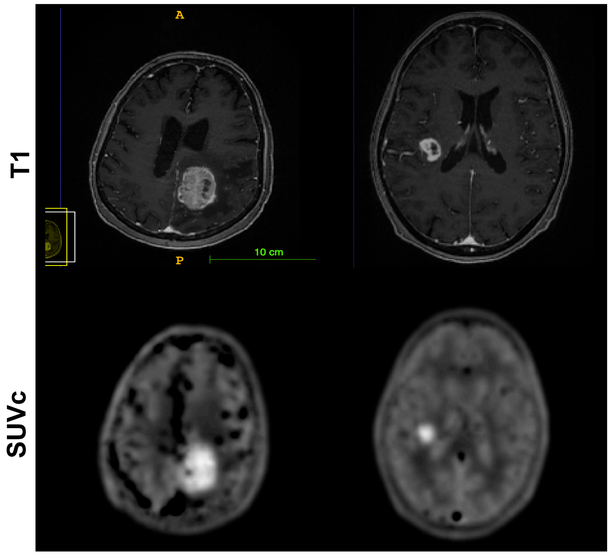
We present analysis of the first 17 scans (16 treatment naïve lesions and 8 radiotherapy treated lesions).

Results

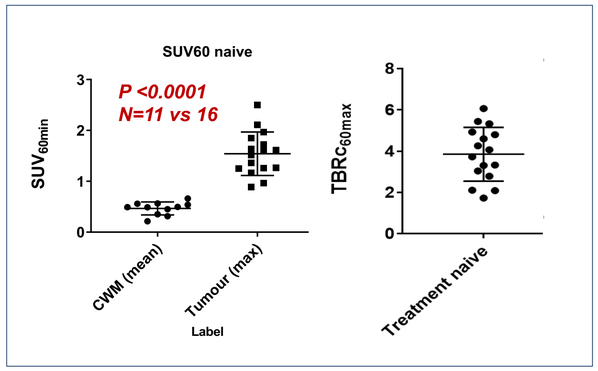
High contrast images were seen at the 60 min time-frame after radiotracer injection.

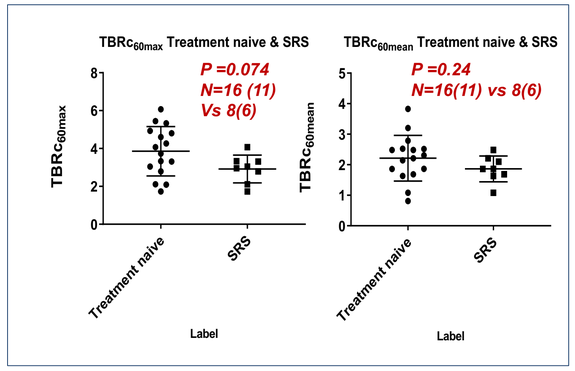
The maximum standardised uptake (SUVmax) within lesions compared to the mean SUV of contralateral brain (SUVmean) was found to differ markedly: Mean ± SEM of 1.54 ± 0.11 vs 0.47 ±0.04 ($p < 0.0001$).

The calculated Tumour-to-Background ratio ranged between 1.73 to 6.07 (Mean ± SEM of 3.85 ± 0.33) supporting the qualitative assertion of high image contrast in patients regardless of the origin of primary cancer.



Pre Treat Post Treat





Results(Contd.)

Both the highest and lowest TBR values were derived from patients who presented with lung cancer primary tumours.

TBR was lower in the cohort that received radiotherapy 2.92 ± 0.26 ($p = 0.074$) and comparatively, dynamic contrast enhanced (DCE)-Kep - symmetric exchange rate of MRI contrast agent across the capillary wall - was markedly lower in the same group.

Summary

FPIA PET shows high uptake regardless of the origin of primary tumour, indicating that the tracer can be used to monitor cerebral metastases.

At the time when only half of patients in the treatment group had completed their assessment, there was a trend towards lower uptake of the radiotracer at early time points after initiating radiotherapy.

The decrease in FPIA may be due in part to decreases in cell viability and/or capillary wall changes.

Acknowledgement
This study was funded by MRC.
We thank the patients who participated in this study.
We also thank Invicro Ltd (UK) for support in the PET/MRI scanning.