Selective Internal Radiation Therapy (SIRT) utilising personalised dosimetry for treatment of liver metastases secondary to adrenocortical carcinoma.

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Abstract:

Treatment of adrenalcortical metastases to the liver with Selective internal radiation therapy (SIRT) is uncommon and rare[1]. We present our case utilising SIRT in a patient who has previously underwent adrenalectomy, radiotherapy to the adrenal bed and extended left hepatectomy. He represented with further bilobed liver metastasis close to the only remaining right hepatic vein. SIRT treatment was performed to the liver metastases using Y-90 TheraSphere microspheres (Boston Scientific, Massachusetts, United States). CT scan 9 months post treatment demonstrated shrinkage of the treated lesions. The case illustrate that SIRT as a viable option when other treatment options have been exhausted.

Background

49 year old gentleman diagnosed with 7.4cm left adrenal mass on CT following diagnosis of hypertension and left ventricular hypertrophy.

Lesion was diagnosed as adrenalcortical carcinoma(ACC) following left adrenalectomy and adjuvant radiotherapy was given. 4 and 5 years following initial surgery, he was diagnosed with hepatic metastases , treated by left hepatectomy and thermal ablation respectively.

He represented 8 years following resection with 2 new hepatic metastases at segment VI and VII. SIRT was utilised in this setting due to proximity of both the lesions to the remaining right hepatic vein.

Technique

Selective internal radiation therapy (SIRT) using TheraSphere, Y90 glass microspheres was performed. Pre-SIRT work-up angiogram was performed, and 2 delivery sites were identified in the segment VI and VII arteries No extrahepatic arterial supply was identified. 99mTc-MAA was injected at both planned delivery sites. Post procedural planar scintigraphy and SPECT demonstrated a lung shunt of 2.6%. Liver volumes covering both injection sites were calculated from the SPECT scan using MIMS software (Ohio, United States). The segment VI and VII segmental volumes were 430cc and 927cc respectively.

The segment VII lesion was relatively hypovascular compared with the segment VI lesion, therefore a dose of 150Gy was selected for segment VII region and 120Gy for the segment VI region. The activity required to achieve the doses for the segment VI and VII regions was 1.11GBq and 2.9GBq respectively. Apart from 2 weeks of severe fatigue, the patient was well otherwise.

Follow up cross sectional imaging at 9 months post treatment. demonstrate reduction of tumour size in both the treated sites

Conclusion

To our knowledge we have presented the first published case using SIRT in the treatment of recurrent metastatic disease in adrenocortical carcinoma utilising personalised dosimetry which has been proven to be safe and effective[2]. We have added to the evidence that SIRT can be an effective treatment for hepatic metastases from adrenocortical carcinoma in patients who are unsuitable for ablation or whose tumour characteristics are less favourable for TACE.
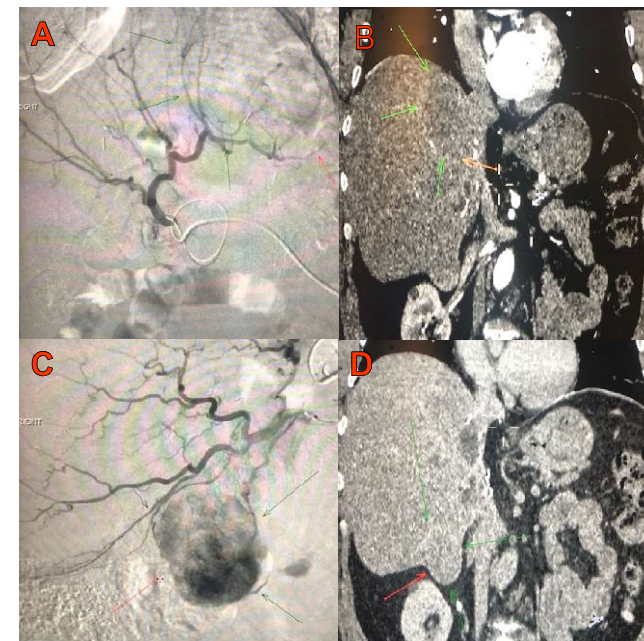

Figure 1. Digital subtracted contrast angiogram and coronal CT abdomen images prior to locoregional therapy demonstrating metastases (arrows) within segment VII (Picture A and B) and segment VI (Picture C and D).].

References

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