CASE REPORT

An Experience of Embolization of Multiple Recurrence Pheochromocytoma Nodules

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ABSTRACT

Recurrence of pheochromocytoma is quite common. We present a case report of a malignant pheochromocytoma with recurrent nodules in right paranephric and posterior-lateral abdominal wall, which underwent transarterial embolization of the nodules.

Keywords: Malignant pheochromocytoma, Embolization, Multiple recurrence

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INTRODUCTION

Pheochromocytoma is a rare endocrine tumour. It is usually associated with a wide range of symptoms ranging from simple episodic headache, sweating, to paroxysmal hypertension and tachycardia as well as life-threatening event such as intractable cardiogenic shock.

Recurrence is fairly common. It is postulated that pheochromocytoma after total adrenalectomy is 6.5–16.5% of patient. Recurrence can be locally at the suprarenal fossa, or distantly such as contralateral gland, bone, lung or tumour spillage. Surgical resection remained the gold standard for the treatment, however transarterial embolization (TAE) provides as a new alternative treatment or pre-surgery intervention to improve outcome.

Our aim is to highlight this case, a previously "successfully" treated pheochromocytoma presented to us with rare recurrence of multiple abdominal wall metastatic nodules. Transarterial embolization of the abdominal pheoochromatic metastatic nodules was successfully performed.

CASE REPORT

A 52 years old gentleman who was referred to Interventional Unit in a tertiary oncology centre. The gentleman presented with paroxysmal hypertension, palpitation and sweating in the year 2009, which the CT images showed there was a right adrenal mass measuring 4.3cmx 4.5cm. He underwent posterior laparoscopic right adrenalectomy back in the year 2010, which HPE confirmed diagnosis of right pheochromocytoma. There is no capsular or vascular invasion nor malignancy seen. However, he again presented with paroxysmal hypertension, palpitation and sweating and subsequently diagnosed with a locoregional recurrence of pheochromocytoma after 6 years post-operation. Patient opted for laparotomy resection of the recurrent pheochromocytoma, which intra-operative findings shows multiple nodules of variable sizes range 1cm to 2cm at the upper pole of the right kidney and right suprarenal fossa.

Unfortunately, during his post-operative follow up in 2018, his urine normetanephrine was again raised. A contrasted CT abdomen was done and shows multiple enhancing lobulated nodules at the right paranephric region as well as the right posterior-lateral abdominal wall which suggestive of metastatic nodules (Fig 1).

This case was discussed in a multi-disciplinary team meeting between the endocrinologist, surgeon, intensivist and interventional radiologist. The outcome of the meeting was a consensus suggesting TAE as the best treatment of choice for targeting the postero-lateral abdominal metastatic nodules.

The patient was admitted a day before the procedure. The procedure and possible outcome were explained to the patient and his first-degree relatives. In our standard practice during the procedure explanation session, we would emphasize the negative outcomes first such as

Figure 1: Contrast-enhanced CT abdomen (coronal plane) shows the presence of multiple homogenously enhancing lobulated nodules at the right paranephric region as well as the right posterior-lateral abdominal wall which suggestive of metastatic nodules.

complications and failed treatment. It is our aim that the patient and their next of kin to understand the procedure completely. There is no premedication before the procedure except for his regular antihypertensive medication.

Standard femoral puncture- preferably on the right common femoral artery. Based on the information gained from the recent CT angiography, the right 1st lumbar artery was targeted and presumably to be the feeder vessel to the metastatic nodule. This small end vessel artery was cannulated with using Cobra C2 5Fr and 0.038″ hydrophilic guidewire first. Once the intended artery was cannulated. A microcatheter Progreat 2.2 (Terumo) guided by a 0.018″ micro guidewire was then advance into tapering calibre of the feeder branches which supply the metastatic nodules (Fig 2). Once the intended location achieved, a focal Xper CT (Phillip Healthcare) was performed to confirm the position. We decided to use coils to occlude the feeder vessel segmental arteries with pushable coils 1 x Complex helical 18, 4mmx 4.0mm (Boston Scientific) and 2 x Figure of 8-18, 2mm x 5mm (Boston Scientific) (Fig 3). Immediately after first coils deployment, there is an episode of unusually high blood pressure (220/130) associated with chest tightness and headache. The BP was controlled after given a bolus dose of IV labetolol 50mg.

The post embolization brachial blood pressure returns

Figure 2: Pre-embolization angiography shows the main arterial supply to the right posterolateral abdominal wall nodules by the 1st right lumbar artery

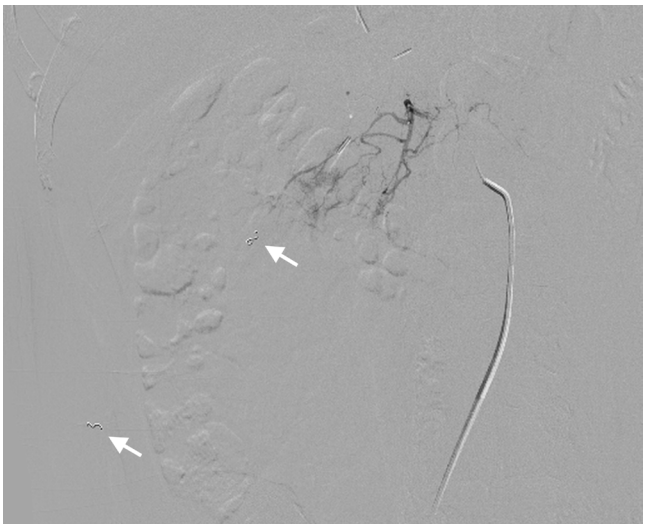

Figure 3: Post coil embolization of the right 1st lumbar artery shows total occlusion of the supplying artery to the right posterolateral abdominal wall nodules. White arrows showing the embolisation coils

to normal range (systolic 120-140/70-90) mmhg; pulse rate 60-70 beats per minute with a single alpha-adrenergic blocker (Doxazosin). Later in the subsequent follow-up, he then self-stops the medicine due to miscommunication between him and the attending doctor during follow up. The resting home monitoring was 130-160/ 80-90 mmHg (not on any medication). He used to have at least 3 episodes of headache per day and daily chest tightness and palpitation before embolization. His symptom improved dramatically post embolization. He only had headache, chest tightness and palpitation once every alternate week. Subsequent 6 months follow up, the patient remained in remission state.

DISCUSSION

Adrenal artery embolization is commonly indicated in cases such as palliative of adrenal neoplasm, reduction of tumour bulk in before operation and in the emergency setup such as hemorrhagic adrenal masses (1–3).
The aim of this case report is:
a) To highlight that the pheochromocytoma tends to recur.
b) The recurrence can occur even at the abdominal wall.
c) Transarterial embolization is one of the effective treatments to control the rare site of pheochromocytoma recurrence.
Many published papers described that pre-operative embolization of hypervascular tumours such as pheochromocytoma and paraganglioma embolization lead to decrease peri-surgical blood loss, hence reduces peri-operative requirements for blood products transfusion and shortens the overall patient admission time (3).

Embolic agents are classified as mechanical devices, particles or liquids, or a simpler way of classification as resorbable and non-resorbable agents. There are no definite reviews of the superiority of one agent over the other. The choice of embolic agents usually depends on a case by case basis, where the availability and cost of the agent, as well as experienced by the intervention radiologist will determine the use of embolic agents (3). In our case, we choose pushable coils for the embolization mainly due to the easiness of coils deployment. Coils are preferred to prevent end artery ischaemia

As per other intervention procedure, reflux of the embolic material into non-targeted arteries is the potential complications of TAE during the embolization procedure which can lead to ischemia or infarction of the organ (1). The most frequently occurred complication including low-grade fever and flank pain lasting less than 48 hours. Another possible risk associated with the procedure includes adrenal insufficiency, pleural effusions, and transient hypertension as well as persistent hiccups has also been reported (1).

CONCLUSION

This report shows us a rare location of functioning malignant pheochromocytoma secondary to metastatic disease which is not demonstrated during initial operation. A successful embolization to the supplying artery was done. The effectiveness of TAE for managing metastatic malignant pheochromocytoma is yet to be proven. A long term follows up and close monitoring of urine normetanephrine is emphasized, with a combination of multicenter experience and larger case number study to prove the efficacy.

ACKNOWLEDGEMENTS

This case is part of a study that was supported by grant (GP-IPS/2018/9663600) from Universiti Putra Malaysia. The authors like to thank the patient the kind permission in the publishing of this case report.

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