Case report

Coexistence of colonic carcinoma, renal cell carcinoma and gastrointestinal stromal tumour—A case report

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ABSTRACT

The occurrence of synchronous primary neoplasms remains an issue of great interest to surgeons and oncologists in particular, and the medical field in general. The question of common genetic pathways in the pathogenesis of such neoplasms is always raised when such associations are seen—whether metachronously or synchronously. The possibility of the coexistence of multiple tumours in the same patient must be taken into consideration when preparing patients for operation and a thorough search of the intraperitoneal organs for such coexistence remains important.

A case of synchronously resected caecal carcinoma, jejunal gastrointestinal stromal tumour and renal cell carcinoma is presented here, along with a literature review on synchronous tumour resection.

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1. Introduction

The occurrence of synchronous primary neoplasms remains an issue of great interest to surgeons and oncologists in particular, and the medical field in general. The question of common genetic pathways in the pathogenesis of such neoplasms is always raised when such associations are seen—whether metachronously or synchronously. The coexistence of gastrointestinal stromal tumours (GISTs) with other malignancies, gastrointestinal or otherwise, has been reported with increasing frequency recently, though the occurrence remains a rarity. Little is known about the genetic basis of any such associations outside of the Carney triad or von Recklinghausen's disease. Renal cell carcinomas have been reported to coexist with GISTs or colorectal neoplasms albeit infrequently. With all that said, the case presented here must be considered within the realm of surgical wonder and oddity. We present a patient with a right renal cell carcinoma, an invasive colonic carcinoma and a GIST of the proximal jejunum—all resected at the same laparotomy.

2. Case report

A 78-year-old man presented to the Emergency department of the Queen Elizabeth hospital with a complaint of generalized weakness and dizzy spells over the preceding few days and weight loss and dark stools for three to four weeks. His prior medical history was significant for symptomatic benign prostatic hyperplasia requiring two transurethral prostatic resections but which had recurred again leaving him with an indwelling urethral catheter. His initial haemoglobin was 4.8 g/dL and he was transfused and investigated.

Investigations included an upper GI endoscopy which was normal, except for a small area of erosive oesophagitis. A CT scan of the abdomen and colonoscopy subsequently done revealed a large caecal tumour (Fig. 1) and a solid mass in the lower pole of the right kidney, separate from the caecal lesion (Fig. 2). Simple cysts were noted in both kidneys and there were no metastases seen in the liver. The patient was prepared for laparotomy and consent was given for right radical nephrectomy and a right hemicolectomy.

The laparotomy revealed a 4 cm caecal tumour (Fig. 3) with enlarged mesocolic lymph nodes, a smooth 2 cm subserosal tumour in the proximal jejunum (Fig. 4) and a 3 cm mass in the inferior pole of right kidney (Fig. 5). There was no evidence of peritoneal, para-aortic or hepatic metastatic disease. The planned operation was performed in addition to a segmental resection of the jejunal lesion. The patient had an uneventful recovery and was discharged on postoperative day 5.

Histological appraisal of the specimens revealed a moderately differentiated adenocarcinoma of the caecum with one of twenty one lymph nodes positive for metastases, a clear cell type Fuhrman grade 2 renal cell carcinoma and a gastrointestinal stromal tumour (GIST) showing no mitoses. All resection margins were clear of tumour and the GIST was positive for c-KIT and DOG-1 and neg-
ative for desmin. The patient declined any further therapy initially and was clinically well 10 months after surgery, when he reconsidered and returned to the clinic. He is currently being assessed for commencement of chemotherapy.

3. Discussion

The occurrence of two or more neoplasms in the lifetime of a single patient is an unusual but well documented occurrence. The Cancer Registry of Norway for example, quotes a 5.1% rate of multiple cancer diagnoses among patients with cancer over the 10-year
The aetiology of multiple primary tumours is quite complex, with genetic, environmental, hormonal, medical treatment-related and gender specific factors, and interactions thereof, undoubtedly playing their parts.

The coexistence of three neoplasms in a single patient is exceedingly rare. Three, four and even five primary malignancies affecting a single patient at different times has been reported, but the synchronous occurrence and resection of three primary intra-abdominal tumours has only rarely been previously reported in the English literature. The synchronous occurrence of GISTs in particular, along with other tumours has been reported with increased frequency in recent times—perhaps as a result of improved pre-operative imaging capabilities. It has been shown that the overall frequency of second tumours in different sites—albeit not necessarily synchronously occurring—among patients with GISTs ranges between 4.5% and 33% with a mean of 13.5. The majority of GIST associated tumours are gastrointestinal in origin—specifically gastric and colonic cancer. In an extensive literature review performed by Agaimy, it was found that lymphomas, leukemias, carcinomas of the prostate, breast, kidneys, lung, female genital tract and carcinoid tumours were the other tumour types most often seen in patients with GISTs. Soft tissue sarcomas, melanoma, bony sarcomas and seminomas have also been infrequently documented.

Liu, in specifically looking at the synchronous occurrence of GISTs and gastrointestinal epithelial malignancies, found that 17.4% of all GISTs were incidentally discovered during the workup or definitive management of an epithelial GI tract malignancy. Wronski, in a much smaller study revealed that 14% of all GISTS treated over a 17-year period occurred simultaneously with another primary gastrointestinal tract malignancy. The majority of synchronously resected GISTs are incidental findings—up to 89% in one series. The presented case was in keeping with this statistic.

The co-occurrence of renal cell carcinoma and other neoplasms has also been reported in the literature. A Norwegian cancer registry-based study revealed that 18% of 1425 RCC patients over a 7-year period had at least one additional primary malignancy in their lifetime. Only 18.7% of these were synchronously diagnosed—that is 3.4% of the overall number. In a retrospective study out of a Japanese University Hospital a synchronous malignant neoplasm was found in 5.9% of patients who had resection of an RCC. Both these studies revealed that a synchronous or antecedent malignancy was a significant prognostic factor for overall survival. Sato in fact showed that the significance of this factor was second only to pathological stage of the RCC. This must be borne in mind when planning treatment of such patients. Both the papillary variant of RCC and GIST may occur as familial tumours related to mutations of the c-MET and c-KIT proto-oncogenes respectively. Both these proto-oncogenes encode proteins belonging to the receptor tyrosine kinase family. Though this does not definitively speak to an etiological relationship between both tumour types, it certainly provides fodder for research into targeted treatment approaches for these patients.

The case described is not only of interest due to the unusual co-incidence of three intra-abdominal malignancies, but it also emphasizes the importance of a thorough exploration of the abdomen when carrying out elective laparotomies. The role of this thorough search has clearly not been made obsolete by the tremendous advances in preoperative imaging modalities and hence its importance cannot be understated. The impact of synchronously existing tumours on the overall prognosis of a patient must be considered when planning therapy in such instances as well.

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Ethical approval
Written informed consent was obtained from the patient for publication of this case report and accompanying images.

References