Case Report

Dual malignancy: a rare presentation of synchronous periampullary carcinoma with renal cell carcinoma

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ABSTRACT

The occurrence of synchronous pancreatic cancer and other primary cancer is not frequent and reaches about 5.6% as reported in autopsic studies. Double resections of the pancreas with another organ due to synchronous malignancies have been published only in quite sporadic sets of cases or individual case reports. We present a case report of a 40 years lady who presented with intermittent pain, fever and jaundice for 15 days. Examination revealed a palpable gall bladder, firm in consistency and tender to touch. She was admitted with a provisional diagnosis of cholangitis and started on intravenous antibiotics. Patient's clinical condition improved and she was planned for a CECT and MRCP which revealed an heterogenously enhancing mass lesion in upper pole of left kidney, s/o of renal cell carcinoma (RCC) and an enhancing lesion in periampullary region s/o periampullary carcinoma with no evidence of free fluid or metastasis. ERCP guided biopsy revealed moderately differentiated adenocarcinoma and USG guided renal biopsy revealed clear cell carcinoma. Whipple's procedure with left nephrectomy was performed. Intra operative findings revealed post-operative course and hospital stay was uneventful. Biopsy revealed poorly differentiated pancreaticobiliary adenocarcinoma with no lympho vascular or lymph nodal invasion (pT3aN₀) and left sided clear cell renal carcinoma with no lympho vascular invasion (pT1N₀). Synchronous malignancy of pancreas and kidney is a very rare presentation. Literature describes presence of RCC with periampullary metastasis and patients presenting with RCC post whipple's procedure but only a handful of case reports describe presence of dual malignancy as reported above.

Keywords: Synchronous, Periampullary carcinoma, RCC

INTRODUCTION

Patients which have diagnosed with a cancer, have a life time risk for developing another de novo malignancy depending on various inherited, environmental and iatrogenic risk factors. Recent improvements in the prognosis of cancer patients have led to an increase in the incidence of second primary cancers, and the frequency of multiple primary malignant tumors is expected to increase as the population ages.^{1,2}

The frequency of multiple primary tumors among all cases of malignancy has been reported as 1 to 3%.³ The

frequency of pancreatic cancer in association with cancer of other organs is estimated to range from 1% to as high as 20% with malignancies predominately of the stomach, colon, thyroid, and genitourinary tract.^{4,5} Second malignancies reported to be associated with renal cell carcinoma (RCC) include Non-Hodgkin's lymphoma, multiple myeloma, chronic lymphatic leukaemia, melanoma and cancers of the bladder, prostate, breast, rectum, and lung with an incidence that varies from 5 to 27%.^{6,7} There has only been infrequent reporting of synchronous or metachronous tumors of the pancreas and the kidney.⁵⁻⁸

RCC, originating in the renal cortex and accounting for (80-85%) of malignant kidney tumors, represents (2-3%) of all cancers, with the highest incidence occurring in more developed countries.⁹ Rates of RCC vary internationally more than 10 folds, suggesting a strong role for exogenous risk factors, in addition to possible roles of geographic differences in genetic susceptibility and diagnostic variability.

Pancreatic ductal adenocarcinoma (PDAC) comprises 2% of all cancer diagnoses and is a highly malignant carcinoma, making it the fourth leading cause of cancer-related death.¹⁰ Unfortunately, due to the late presentation of symptoms, only (10-20%) of patients are candidates for surgical resection, which remains the only viable chance for cure.¹¹

To the best of our knowledge, only few cases with synchronous or metachronous occurrence of both tumors have been reported in the literature.

CASE REPORT

We present the case of a 40 years lady who presented with intermittent pain, fever and jaundice for 15 days. Examination revealed a palpable gall bladder, firm in consistency and tender to touch. The patient was admitted with a provisional diagnosis of cholangitis and started on intravenous antibiotics. Patient's clinical condition improved and she was planned for a MRCP which revealed an enhancing lesion in periampullary region s/o periampullary carcinoma and an heterogenously enhancing mass lesion in upper pole of left kidney (Figure 1).

Figure 1: Coronal section CECT images showing left sided renal mass.

CECT revealed features s/o left RCC with periampullary carcinoma with no evidence of metastasis (Figure 2). A suspicion of primary periampullary carcinoma with renal metastasis was made and the patient further evaluated with an ERCP guided FNAC of the periampullary lesion which revealed moderately differentiated adenocarcinoma and USG guided renal biopsy revealed clear cell carcinoma. A PET scan was done which showed FDG uptake at the periampullary and renal lesion

with no uptake elsewhere. Hence a diagnosis of dual synchronous malignancy was made based on Warren and Gates criteria and Whipple's procedure with left nephrectomy was performed. Intra operative findings revealed a 6×5 cms tumour in the upper pole of left kidney with a 3×3 cms mass lesion in the distal end of CBD with extension in the head of pancreas. Liver, spleen, parietal peritoneum was normal. Post-operative course was uneventful. Biopsy revealed poorly differentiated pancreaticobiliary adenocarcinoma with no lymphovascular or lymph nodal invasion (pT3aN0) and left sided clear cell renal carcinoma with no lymphovascular invasion (pT1N0). Patient was started on adjuvant chemotherapy with gemcitabine and cisplatin, is doing well clinically, and is on regular follow up.

Figure 2: Transverse CECT images showing double duct sign with a periampullary mass lesion.

Figure 3: Post-operative specimens, on the left side specimen post whipple's procedure and right side the specimen of left kidney with tumor.

DISCUSSION

Multiple primary malignancies in a single patient were first described in 1879 by Billroth.¹² The neoplasms may be limited to a single organ or, as in our case, involve multiple and anatomically separate organs. The north American association of central cancer registries (NAACCR) classifies multiple primary tumors into two categories: synchronous, in which the cancers occur at the same time (the surveillance epidemiology and end

results program (SEER) definition is within two months) and metachronous, in which the cancers follow in sequence, that is, more than two months apart.¹³ Metachronous primary malignancies are becoming increasingly common because of an increase in the number of elderly cancer survivors, greater awareness, and improved diagnostic modalities.

Whether the second lesion is truly a primary or represents metastases is difficult to decide and for this the Warren and Gates criteria (1932) are used which proposed that a diagnosis of multiple primary malignancies requires the following.¹² Each tumor should present a definite picture of malignancy, each tumor should be histologically distinct, and the possibility that one is a metastasis of the other must be excluded.

Although the mechanisms involved in the development of multiple primary cancers are not fully understood, several factors have been implicated. These findings are complex, and include environmental factors (tobacco and alcohol abuse, occupation, pollution), genetic predisposition, previous medical treatment (radio or chemotherapy), gender-specific factors, hormonal factors, and interaction of these factors.¹⁴ Studies examining genetic factors found that microsatellite instability was more frequent observed in multiple primary cancers than in sporadic cancers.¹⁵ The incidence of double primary cancer has been carried out by the review of cancer registries in several countries, and range from (1.0-20%).⁴ The first single case report of double cancer involving pancreatic and renal cell carcinoma was reported by Sasaki et al, in 1969.¹⁶ Since then, only a few more case reports have been published of this coincidence with the largest group including 6 patients. Alexakis et al, presented 2 patients with RCC and synchronous primary PDAC.⁸

The overall reported incidence of PDAC associated with other organ malignancies is (1-20%).⁴ Kamisawa et al, found that pancreatic cancer was associated with a high incidence of malignancies of the gastrointestinal tract, especially the stomach.¹⁷ Gerdes et al, investigated 69 patients with PDAC and found 13 patients (19%) suffering from second primary malignancies⁵, but none had RCC. A study of pancreatic cancer found 134 (5.6%) associated malignancies in 2394 autopsies including 7 with RCC (0.29%).⁴ Rabbani et al, identified multiple primary malignancies in 27% of 763 RCC patients and found an increased incidence of prostate, bladder and colorectal cancer and Non-Hodgkin's lymphoma but no PDAC.¹⁸

Several hereditary cancer syndromes coincide with an increased risk of pancreatic cancer. PDAC is seen in some breast cancer families with BRCA1 and BRCA2 mutations.¹⁹ Affected family members of the FAMMM as well as those with a positive family history of ataxia-telangiectasia have much higher risk of developing PDAC compared with the general population.²⁰ Patients

with HNPCC have an increased risk of pancreatic cancer as well as stomach, breast, small bowel, endometrial, and renal pelvis cancer.²¹

Patients with a RCC have a significantly higher risk of other subsequent primary malignancies.^{6,14} While prevalence studies based on autopsy series have identified a (30-40%) incidence of other primary malignancies in RCC patients, cohort studies have identified rates of (4.5-27.4%).^{6,7} A study by Czene et al, clearly indicates that patients with RCC are at increased risk of other cancers not only the first year after primary diagnosis, but also after more than 10 years.²² Regarding second primary pancreatic cancers in RCC patients, environmental factors, such as dietary habits or tobacco use, and genetic factors have also been suggested to be risk factors.²³ Although this study did not examine the risk factors for both primary cancers patients, tobacco cigarette smoking is a common environmental risk factor of both cancers, approximating to a 2 folds relative risk.²⁴

CONCLUSION

Nevertheless, we believe that there could be a new association between these two primary tumors. Further analytic epidemiological studies, including evaluation of gene-environment interactions, are needed to specifically identify reasons for double pancreatic-kidney tumors.

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REFERENCES

1. Mariotto AB, Rowland JH, Yabroff KR, Scoppa S, Hachey M, Ries L, et al. Long-term survivors of childhood cancers in the United States. *Cancer Epidemiol Biomarkers Prev.* 2009;18:1033-40.
2. Porena M, Vespasiani G, Rosi P, Costantini E, Virgili G, Mearini E, et al. Incidentally detected renal cell carcinoma: role of ultrasonography. *J Clin Ultrasound.* 1992;20:395-400.
3. Miyaguni T, Muto Y, Kusano T, Yamada M, Matsumoto M, Shiraishi M. Synchronous double cancers of the remnant stomach and pancreas: report of a case. *Surg Today.* 1995;25:1038-42.
4. Eriguchi N, Aoyagi S, Hara M, Okuda K, Tamae T, Fukuda S, et al. Synchronous or metachronous double cancers of the pancreas and other organs: Report on 12 cases. *Surg Today.* 2000;30:718-21.
5. Gerdes B, Ziegler A, Ramaswamy A, Wild A, Langer P, Bartsch DK. Multiple primaries in pancreatic cancer patients: Indicator of a genetic predisposition. *Int J Epidemiol.* 2000;29:999-1003.
6. Koyama K, Furukawa Y, Tanaka H. Multiple primary malignant neoplasms in urologic patients. *Scand J Urol Nephrol.* 1995;29:483-90.

7. Rabbani F, Grimaldi G, Russo P. Multiple primary malignancies in renal cell carcinoma. *J Urol.* 1998;160:1255-9.
8. Alexakis N, Bosonnet L, Connor S, Ellis I, Sutton R, Campbell F, et al. Double resection for patients with pancreatic cancer and a second primary renal cell cancer. *Dig Surg.* 2003;20:428-32.
9. Tavani A, Vecchia LC. Epidemiology of renal-cell carcinoma. *J Nephrol.* 1997;10:93-106.
10. Jemal A, Siegel R, Xu J, Ward E. Cancer statistics, 2010. *CA Cancer J Clin.* 2010;60:277-300.
11. Bold RJ, Charnsangavej C, Cleary KR, Jennings M, Madray A, Leach SD, et al. Major vascular resection as part of pancreaticoduodenectomy for cancer: radiologic, intraoperative, and pathologic analysis. *J Gastrointest Surg.* 1999;3:233-43.
12. Warren S, Gates D. Multiple primary malignant tumor: a survey of the literature and a statistical study. *Am J Cancer.* 1932;51:1358-414.
13. A Review of the Definition for Multiple Primary Cancers in the United States,” in Workshop Proceedings From December 4-6, 2002 in Princeton, New Jersey, H. L. Howe, Ed., North American Association of Central Cancer Registries, Springfield, Ill, USA; 2003.
14. Beisland C, Talleraas O, Bakke A, Norstein J. Multiple primary malignancies in patients with renal cell carcinoma: a national population-based cohort study. *BJU Int.* 2006;97:698-702.
15. Ohtani H, Yashiro M, Onoda N, Nishioka N, Kato Y, Yamamoto S, et al. Synchronous multiple primary gastrointestinal cancer exhibits frequent microsatellite instability. *Int J Cancer.* 2000;86:678-83.
16. Sasaki E, Kushida S, Okinaka T, Sasaki K, Abe S. Case report of double cancer of the pancreas and the kidney with polyposis of the large intestine (in Japanese). *Gan No Rinsho.* 1969;15:203-6.
17. Kamisawa T, Tu Y, Egawa N, Nakajima H, Tsuruta K, Okamoto A. The incidence of pancreatic and extra pancreatic cancer in Japanese patients with chronic pancreatitis. *Hepato-gastroenterology.* 2007;54:1579-81.
18. Rabbani F, Reuter V, Katz J, Russo P. Second primary malignancies associated with renal cell carcinoma: Influence of histologic type. *Urology.* 2000;56:399-403.
19. Lal G, Liu G, Schmocker B, Kaurah P, Ozcelik H, Narod SA, et al. Inherited predisposition to pancreatic adenocarcinoma: Role of family history and germ-line p16, BRCA1, and BRCA2 mutations. *Cancer Res.* 2000;60:409-16.
20. Vasen HF, Gruis NA, Frants RR, Velden DPA, Hille ET, Bergman W. Risk of developing pancreatic cancer in families with familial atypical multiple mole melanoma associated with a specific 19 deletion of p16 (p16-Leiden). *Int J Cancer.* 2000;87:809-11.
21. Watson P, Lynch HT. Extracolonic cancer in hereditary non-polyposis colorectal cancer. *Cancer.* 1993;71:677-85.
22. Czene K, Hemminki K. Kidney cancer in the Swedish Family Cancer Database: familial risks and second primary malignancies. *Kidney Int.* 2002;61:1806-13.
23. Hemminki K, Li X, Czene K. Familial risk of cancer: data for clinical counseling and cancer genetics. *Int J Cancer.* 2004;108:109-14.
24. Chiu BC, Lynch CF, Cerhan JR, Cantor KP. Cigarette smoking and risk of bladder, pancreas, kidney, and colorectal cancers in Iowa. *Ann Epidemiol.* 2001;11:28-37.

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