Prolonged survival after laparoscopic splenectomy for recurrent ovarian cancer and no adjuvant therapy: a report and review of the literature

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Introduction

Isolated splenic recurrent ovarian cancer is uncommon and may present remotely from initial surgery and chemotherapy. Surgical excision remains the treatment of choice for this condition. While widely used, the role of adjuvant therapy in this situation is unclear. We present a case of isolated recurrent splenic ovarian cancer treated with surgery and no adjuvant therapy, and review the literature on management of this condition.

Case study

A 59-year-old woman underwent optimal surgical cytoreduction for stage IIIc serous papillary ovarian cancer. She subsequently received six cycles of carboplatin and pacilitaxel. Her serum carcinoma antigen (CA)125, which had measured 349 U/ml (normal 0-35 U/ml), normalised after the third cycle of chemotherapy. She then had routine follow-up. Twenty-seven months later, despite being asymptomatic, the serum CA125 increased to 149 U/ml and a computed tomography scan noted a 30-mm lesion in the spleen (Figure 1). A positron emission tomogram (PET) scan confirmed a glucose-avid lesion in the spleen, with no evidence of metastatic disease elsewhere. The patient underwent a total laparoscopic splenectomy, with delivery of the spleen through a small left subcostal incision. The patient made an uneventful recovery. Final pathology revealed a spleen measuring 105 x 75 x 40 mm, weighing 120 g, with a 50 x 35 x 25-mm lobulated nodule distending into, but not grossly penetrating, the capsule. Microscopy showed grade 3 serous papillary cancer compatible with a metastatic ovarian tumour with negative margins, negative peritoneal washings and peritoneal biopsies. The CA125 returned to normal within a week of the operation. She chose not to have further chemotherapy, and she remains free of disease six years later.

Discussion

Our patient has had a prolonged remission following laparoscopic splenectomy for isolated recurrent ovarian cancer and no further adjuvant treatment. This

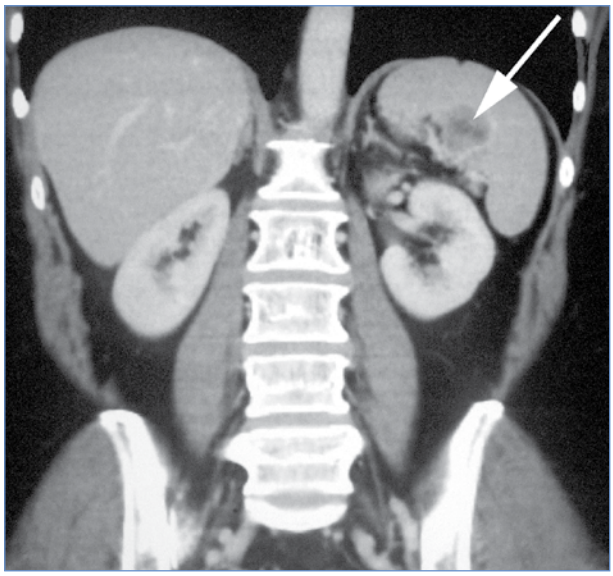

Figure 1: Computer axial tomography demonstrating a intraparenchymal lesion in the spleen (white arrow)

is the first case of isolated recurrent ovarian cancer, demonstrating prolonged survival after laparoscopic splenectomy, with no postoperative adjuvant therapy.

Isolated splenic recurrence of ovarian cancer is exceedingly rare. The ovary is the most common gynaecological site of origin of metastatic deposits in the spleen. Up to 9% of splenic lesions originate in the ovary.[1] Previous reports of patients undergoing splenectomies for malignant disease have identified ovarian cancer as the most common site of origin of metastatic splenic tumours.[2] A splenectomy is not infrequently required as part of a primary or secondary debulking procedure for epithelial cancer, and this is usually carried out in the context of peritoneal carcinomatosis.[3] Sonnendecker et al reported that 7.6% of their patients with advanced disease required splenectomy, and despite utilisation of prophylactic

Table I: Published series on the postsurgical management and outcomes of patients with isolated recurrence of ovarian cancer in the spleen

Author	Cases	FIGO stage	Adjuvant therapy after first surgery	Time to recurrence	Adjuvant treatment	Follow-up
Nosanchuk[9]	1	N/A	CTX + doxorubicin + CDDP	36	5-FU + MTX	N/A
Minagawa[10]	1	IIIb	N/A	60	5-FU	12 NED
Farias-Eisner[11]	4	IIIc (3 cases)	CTX + platinum	18-120	Radiotherapy (2 cases)	6-36 NED
		IV (1 case)				78 AWD (1 case)
Max[12]	1	Ic	N/A	30	N/A	6 NED
Balat[13]	1	IIIc	CTX + CDDP	66	CBDCA	6 AWD
Kobayashi[14]	1	III	CDDP + epirubicin	24	Paclitaxel I + CDDP	N/A
Klingler[15]	1	III	N/A	24	N/A	6 NED
Gemignani[16]	6	III	CTX + CDDP/CBDCA	28-88	Paclitaxel + CBDCA/ CDDP	6-65 NED
					Tamoxifen (1 case)	
Lauro[17]	1	Ic	CTX + radiotherapy	180	CBDCA + CTX	96 NED
Yano[18]	1	IIIc	N/A	36	N/A	N/A
Koh[2]	1	N/A	N/A	12	Paclitaxel + CBDCA	24 AWD
Tserkezoglou[19]	1	IIIb	CDDP	24	CBDCA	20 NED
Otrock[20]	1	IIa	Paclitaxel + CBDCA	84	Paclitaxel + CBDCA	11 NED
Furukawa[21]	1	Ic	N/A	108	Paclitaxel + CBDCA	60 NED
Alloni[22]	2	IIIc	Paclitaxel + CBDCA (1 case)	53 and 36	Paclitaxel + CBDCA	7 NED
			Adriamycin + CMF (1 case)			
Yoshioka[23]	1	N/A	N/A	33	Chemotherapy 24 months	120 NED
Izuishi[24]	1	IIc	5-FU + CTX + adriamycin + CDDP	240	N/A	60 NED
Hasegawa[25]	1	Ib	CTX + epiruibicin + CDDP	151	Paclitaxel + CBDCA	24 AWD
Suzumura[26]	1	IIc	Paclitaxel + CBDCA	84	Paclitaxel + CBDCA	4 NED
Pather (current case)	1	IIIc	Carboplatin/ pacilitaxel X6	27	Nil	60 NED

5-FU: fluorouracil, AWD: alive with disease, CBDCA: carboplatin, CDDP: cisplatin, CMF: cyclophosphamide/methotrexate/fluorouracil, CTX: cyclophosphamide, FIGO: International Federation of Gynecology and Obstetrics, MTX: methotrexate, N/A: received adjuvant therapy (specific details of adjuvant treatment not provided), NED: no evidence of disease

heparin, the risk of thrombocytosis and thrombosis remained significant.[4] The spleen has long been regarded as an immunologically privileged site for cancer based on its lack of afferent lymphatics, its rhythmic contractile nature, the presence of immunocompetent splenic tissue with potential antineoplastic properties, and the acute angle of origin and tortuosity of the splenic artery. This may explain the rarity of splenic metastases in patients with ovarian cancer.

Previous cases of isolated splenic recurrent ovarian cancer are outlined in Table I. The mean time to detection of recurrence is 66 months. Elevated serum CA125 and imaging are usually used to confirm the diagnosis. Our patient was completely asymptomatic on presentation, as noted in some patients in previous studies. The most frequently used treatment was open splenectomy. All previous patients had chemotherapy or radiotherapy. Where stated, the median survival was 32 months.

Performance status, CA125 level on relapse; treatment-free survival; patient age; the presence or absence of ascites, the number of lesions, the distribution of tumours, and largest tumour size, on recurrence; and the ability to cytoreduce the tumours to no or minimal microscopic disease at secondary surgery are associated with improved outcomes following secondary cytoreductive surgery for recurrent ovarian cancer.[5-7]

Previous cases of splenectomy carried out for recurrent ovarian cancer have been performed open or using total laparoscopic splenectomy. The benefits of laparoscopic splenectomy include a shorter hospital stay, less postoperative pain and lower blood loss.[8] The major concerns associated with this procedure are the risk of splenic trauma, with dissemination of tumour cells, and difficulty in extracting the specimen, with contamination of the skin. The use of wound protectors, together with the ability to remove specimens intact in an endobag, has meant that these obstacles have been easily overcome. Port site recurrence in patients undergoing laparoscopic splenectomy for recurrent splenic ovarian cancer has not been described.

All patients with isolated splenic recurrences have received post-splenectomy adjuvant therapy. The benefit of adjuvant therapy in this situation is unknown, because of the rarity of solitary splenic metastasis. However, as the advent of the PET scan has facilitated sensitive detection of recurrent disease, the need for adjuvant therapy may be limited.

The isolated splenic recurrence of ovarian cancer is uncommon, but if detected and treated with surgical excision, it is associated with an excellent prognosis. Laparoscopic splenectomy is appropriate in this setting and does not increase the risk of port site recurrence. The use of adjuvant therapy in this setting is unclear, but may be withheld in the presence of a negative PET scan and with tumours that do not involve the capsule of the spleen.

References

1. Lam KY, Tang V. Metastatic tumors to the spleen: a 25-year clinicopathologic study. Arch Pathol Lab Med. 2000;124(4):526-530.
2. Koh YS, Kim JC, Cho CK. Splenectomy for solitary splenic metastasis of ovarian cancer. BMC Cancer. 2004;4:96.
3. Hanprasertpong J, Fujiwara K. Splenectomy and surgical cytoreduction in epithelial ovarian cancer: a review. Eur J Cancer Care (Engl). 2010;20(3)287-293:
4. Sonnendecker EW, Guidozzi F, Margolius KA. Splenectomy during primary maximal cytoreductive surgery for epithelial ovarian cancer. Gynecol Oncol. 1989;35(3):301-306.
5. Al Rawahi T, Lopes AD, Bristow RE, et al. Surgical cytoreduction for recurrent epithelial ovarian cancer. [Cochrane review]. In: The Cochrane Library, Issue 2, 2013. Oxford: Update Software.
6. Bristow RE, Lagasse LD, Karlan BY. Secondary surgical cytoreduction for advanced epithelial ovarian cancer. Patient selection and review of the literature. Cancer. 1996;78(10):2049-2062.
7. Oksefjell H, Sandstad B, Trope C. The role of surgery in the second relapse of epithelial ovarian cancer. Selection criteria, morbidity and survival outcome. Eur J Gynaecol Oncol. 2011;32(4):369-376.
8. Diaz J, Eisenstat M, Chung R. A case-controlled study of laparoscopic splenectomy. Am J Surg. 1997;173(4):348-350.
9. Nosanchuk JS, Tyler WS, Terepka RH. Fine-needle aspiration of spleen: diagnosis of a solitary ovarian metastasis. Diagn Cytopathol. 1988;4(2):159-161.
10. Minagawa Y, Kanamori Y, Ishihara H, et al. Solitary metastatic ovarian carcinoma of the spleen: a case report. Asia Oceania J Obstet Gynaecol. 1991;17(1):45-48.
11. Farias-Eisner R, Braly P, Berek JS. Solitary recurrent metastasis of epithelial ovarian cancer in the spleen. Gynecol Oncol. 1993;48(3):338-341.
12. Max LD, Stastny JF, Frable WJ. Solitary splenic metastasis of an adenocarcinoma of the ovaries. Gynecol Obstet Invest. 1996;42(3):214-216.
13. Balat O, Verschraegen C, Erbilen M, et al. Recurrence of ovarian cancer as a delayed solitary parenchymal splenic metastasis. Int J Gynecol Cancer. 1996:496-498.
14. Kobayashi A, Yamaguchi M, Koarai N, Sugizaki N. A case of solitary metastatic splenic tumor of ovarian carcinoma. Gan To Kagaku Ryoho. 1997;24(10):1341-1345.
15. Klinger PJ, Smith SL, Abendstein BJ, Hinder RA. Hand-assisted laparoscopic splenectomy for isolated splenic metastasis from an ovarian carcinoma: a case report with review of the literature. Surg Laparosc Endosc. 1998;8(1):49-54.
16. Gemignani ML, Chi DS, Gurin CC, et al. Splenectomy in recurrent epithelial ovarian cancer. Gynecol Oncol. 1999;72(3):407-410.
17. Lauro S, Trasatti L, Capalbo C, et al. Solitary splenic recurrence of epithelial ovarian cancer: a case report and review. Anticancer Res. 2002;22(6B):3643-3645.
18. Yano H, Iwazawa T, Kinuta M, et al. Solitary splenic metastasis from ovarian cancer successfully treated by hand-assisted laparoscopic splenectomy: report of a case. Surg Today. 2002;32(8):750-752.

19. Tserkezoglou A, Kontou S, Hatjieleftheriou G, et al. Solitary parenchymal splenic recurrence of ovarian adenocarcinoma: a case report and review of the literature. Anticancer Res. 2005;25(2B):1471-1476.
20. Otrock ZK, Seoud MA, Khalifeh MJ, et al. Laparoscopic splenectomy for isolated parenchymal splenic metastasis of ovarian cancer. Int J Gynecol Cancer. 2006;16(5):1933-1935.
21. Furukawa N. Solitary splenic metastasis of ovarian cancer. Arch Gynecol Obstet. 2007;275(6):499-502.
22. Alloni R, Garberini A, Caputo D, Coppola R. Solitary splenic metastasis of ovarian carcinoma: report of two cases. Surg Today. 2008;38(12):1144-1147.
23. Yoshioka R, Okabayashi T, Nishimori I, et al. A long-survived case with solitary splenic metastasis from ovarian carcinoma. Surg Technol Int. 2008;17:192-194.
24. Izuishi K, Sano T, Usuki H, et al. Isolated splenic metastasis of ovarian cancer 20 years after operation: a case report and literature review. Tumori. 2010;96(5):784-786.
25. Hasegawa H, Naitoh H, Tsuchihashi H, et al. A case of solitary splenic metastasis from an ovarian cancer 12 years after primary resection. Gan To Kagaku Ryoho. 2010;37(9):1799-1803.
26. Suzumura K, Okada T, Yoshida Y, et al. A case of solitary splenic metastasis from ovarian cancer resected by laparoscopic splenectomy. Nihon Rinsho Geka Gakkal Zasshi. 2011;72:1277-1282.