

## A Case of Isolated Paraaortic Lymph Node Recurrence from Colon Cancer Successfully Treated with Chemoradiotherapy

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Isolated paraaortic lymph node (PALN) recurrence from colorectal cancer is rare and has no established treatment. A 56-year-old woman was referred to our hospital for the treatment of PALN recurrence in June 2005. She had undergone right hemicolectomy for ascending colon cancer two years earlier. The pathological diagnosis in 2003 was a well-differentiated adenocarcinoma with positive PALN metastasis in 3 of 4 dissected nodes (T3, N1b, M1a, stage IVa). At our hospital, chemoradiotherapy was started, with the radiation field determined from positron emission tomography (PET) images. Oral tegafur/uracil (600 mg/day) plus leucovorin (75 mg/day) therapy was also started. Radiotherapy (1.5 Gy/ fraction, total of 45 Gy) was completed in August 2005, while oral chemotherapy was discontinued 3 weeks after it was started due to diarrhea and epigastric discomfort. The serum carcinoembryonic antigen level was 193 ng/ml ( $N < 5$ ) before treatment and decreased to within normal limits 3 months after initiation of chemoradiotherapy. Complete remission was confirmed by computed tomography (CT) and PET in December 2005 and has continued for more than 6 years. This case shows that chemoradiotherapy is potentially curative for PALN recurrence from colorectal cancer. To our knowledge, this is the first report of more than 5 years disease-free survival in a patient with PALN recurrence from colon cancer treated with chemoradiotherapy.

**Key words:** colorectal cancer, paraaortic lymph node recurrence, radiotherapy, chemoradiotherapy, PET/CT

### INTRODUCTION

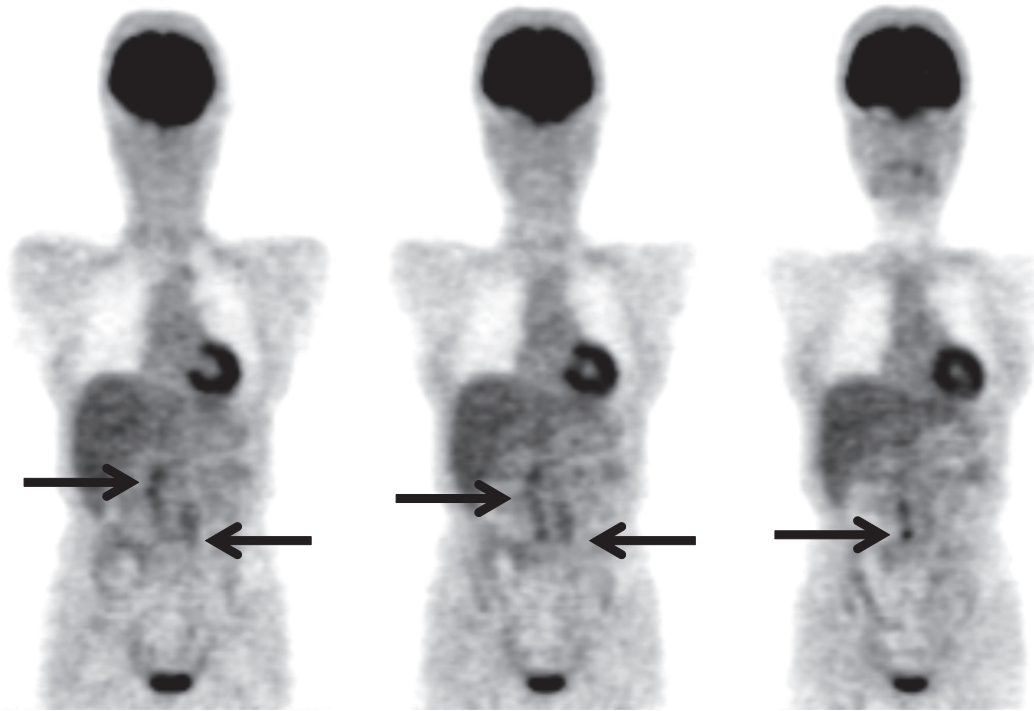
Isolated paraaortic lymph node (PALN) recurrence from colorectal cancer is rare and has no established treatment. We report here a patient with PALN recurrence from ascending colon cancer. Since chemoradiotherapy was administered in 2005 for this recurrence, complete remission has continued for more than 6 years. Positron emission tomography (PET) was helpful in the detection of the metastasis and in determining the radiation field. This case shows that chemoradiotherapy is potentially curative for PALN recurrence from colorectal cancer.

### CASE REPORT

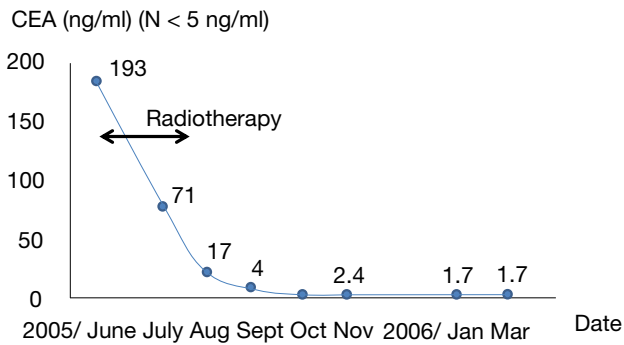
A 56-year-old woman was referred from a nearby hospital in June 2005. At that hospital, she had undergone right hemicolectomy for advanced ascending colon cancer in March 2003. The pathological diagnosis at that time was a well-differentiated adenocarcinoma (7 cm in diameter) invading the subserosa (T3). Three of 9 dissected regional lymph nodes were positive for metastasis (N1b) and 3 of 4 dissected PALNs were positive (M1a). The pathological stage in 2003 was retrospectively determined to be IVa according to the 2010 TNM staging system of the AJCC/UICC. The patient was subsequently followed at the original hospital without adjuvant chemotherapy. In May 2005, the serum carcinoembryonic antigen (CEA) level rose and a PET scan revealed PALN recurrence (Fig. 1).

She was referred to our hospital in June 2005 for further treatment of the PALN recurrence. She had no other past history and had a good performance status with no complaints. In June 2005, chemoradiotherapy was started. Radiotherapy was performed with anterior-posterior opposing fields with a field size  $8 \times 18$  cm covering the PET-positive lesions for 14 fractions. Following a break for 1 week because of abdominal discomfort, radiotherapy was restarted with a field size of  $7 \times 14$  cm for 11 fractions. At the initiation of radiotherapy, oral tegafur/uracil (UFT; 600 mg/day) plus leucovorin (LV; 75 mg/day) therapy was also started. Radiotherapy (1.8 Gy/fraction, total of 45 Gy) was completed in August 2005, but the oral chemotherapy agents were discontinued 3 weeks after they were started due to diarrhea and epigastric discomfort (grade 1 based on the Common Terminology Criteria for Adverse Events v4.0).

Three months after initiation of chemoradiotherapy (September 2005), the patient's serum CEA level, which was 193 ng/ml ( $N < 5$ ) before treatment (June 2005), decreased to within normal limits (Fig. 2) and remarkable tumor shrinkage was apparent on computed tomography (CT) scans (Fig. 3). Complete remission was confirmed by CT and PET in December 2005. During January and July 2006, oral UFT/LV was administered without apparent adverse effects. Since then, the patient has been observed with periodical CEA measurement and imaging studies and has undergone no further treatment. Complete remission



**Fig. 1** On three consecutive coronal tomographic PET images, high FDG uptake was noted in multiple paraaortic lymph nodes.



**Fig. 2** Serum CEA level was 193 ng/ml before treatment (June 2005) and decreased to within normal limits 3 months after initiation of chemoradiotherapy.

has lasted for 6 years, as of December 2011.

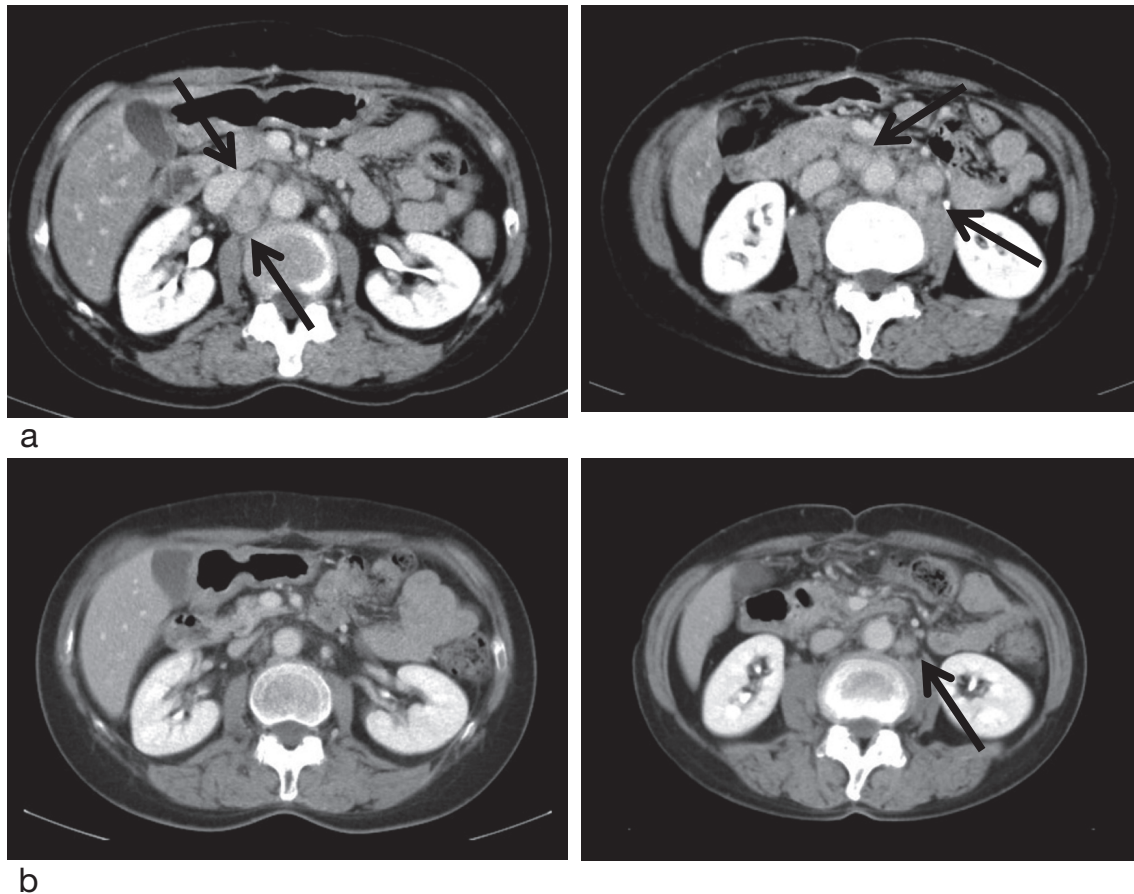
### DISCUSSION

PALN is classified as nonregional or distant LN in colorectal cancer. However, during surgery for primary colorectal cancer, PALN is occasionally dissected. Synchronous PALN metastasis is observed during surgery in 2.1% and 1.9% of cases of sigmoid colon cancer and rectal cancer, respectively, according to a multi-institutional questionnaire study conducted by the Japan Society of Coloproctology [1]. According to this study, PALN dissection was performed, to some extent, with curative intent in as many as 75% of the surveyed institutions and the procedure was therefore assumed to be beneficial in patients with sigmoid colon cancer with PALN involvement [1].

Unlike synchronous PALN metastasis, metachronous PALN metastasis rarely becomes a main target of treatment. As yet, no standard for the treatment of PALN recurrence has been established. PALN recurrence is often accompanied by metastasis to other sites, although Min *et al.* [2] reported that isolated PALN recurrence was identified in only 1.3% (38/2916) of

patients after curative resection of colorectal cancer. If PALN recurrence is deemed localized and resectable, it can be targeted for surgical treatment, as in the case of isolated liver or lung metastasis. Five-year survival rates of 30–40% are seen with resection of liver metastasis and 48% with resection of lung metastasis [3]. Surgical salvage of PALN recurrence, even if it is an aggressive resection of adjacent organs including the aorta, is feasible with acceptable morbidity [4]. The propensity for further recurrence after salvage surgery appears to be high [2, 4, 5], but disease-free survival for more than 5 years has been observed in some patients [5–7]. The determination of prognostic factors is required to select those patients most likely to benefit from lymphadenectomy [7].

To our knowledge, no published reports have indicated more than 5 years disease-free survival following chemotherapy alone in patients with PALN recurrence from colon cancer. In the study of Min *et al.*, 13 patients with isolated PALN recurrence after curative resection of colorectal cancer who were treated with chemotherapy (oxaliplatin and/or irinotecan-containing chemotherapy) eventually developed mul-



**Fig. 3** CT scans (a) before treatment (June 2005) shows multiple enlarged paraaortic lymph nodes and (b) remarkable tumor shrinkage at 3 months after initiation of chemoradiotherapy (September 2005).

tiple metastases in other organs. However, the authors emphasized that many of the patients had not received the most up-to-date and potentially beneficial forms of chemoradiotherapy [2]. Chemotherapy for colorectal cancer has rapidly progressed following the introduction of monoclonal antibody agents [3]. With recent neoadjuvant chemotherapy for rectal cancer, as many as 27% patients have shown a complete pathological response [8]. Neoadjuvant chemotherapy with salvage surgery may be a new approach to the treatment of PALN recurrence [4].

Radiotherapy in conjunction with surgery has been used widely in the treatment of rectal cancer [9]. However, its reported application to PALN recurrence from colorectal cancer is rare, and its survival benefit remains unknown. Kim *et al.* [10] reported 7 patients with PALN recurrence from rectal cancer after curative resection. One patient remained disease-free for 26 months and another was alive with recurrence after 70 months. Their preliminary study suggested that selected PALN recurrence could be potentially salvaged by radiotherapy. In another study, 6 of 46 patients (13.0%) who received preoperative chemoradiotherapy for rectal adenocarcinoma had a complete pathological response [11]. The effectiveness of radiotherapy can be expected in radiosensitive carcinoma. Our patient took UFT/LV for only 3 weeks because of side effects and still had a complete response. In this case, radiotherapy, rather than chemotherapy, seemed

to contribute to the complete remission.

PET and PET/CT has contributed to the diagnosis of PALN metastasis [2, 5, 6] and the determination of the radiation field [10]. PET/CT has an established role in the detection of recurrent disease and has been applied to planning radiotherapy [12]. In our patient with a rising CEA level, PET helped to identify PALN metastasis, exclude metastasis at other sites, and better delineate tumor extension in radiation planning.

To our knowledge, this is the first report of disease-free survival beyond 5 years in a patient with PALN recurrence from colon cancer treated with chemoradiotherapy. Chemotherapy [3] and radiotherapy [9] continue to improve, and multi-modality treatments including salvage surgery could further improve the survival of patients with loco-regional recurrence, such as PALN recurrence from colorectal cancer.

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