

## Case Report

# Breast Metastasis and Ovary Metastasis of Primary Colon Cancer

Hung-I Cheng<sup>1\*</sup>, Chien-Jen Chang<sup>2</sup>, Pu-Tsui Wang<sup>3</sup>, Pei-Wen Hung<sup>4</sup>, Kwok-Ming Chang<sup>4</sup>

<sup>1</sup>Department of Hematology and Oncology, Hsinchu Mackay Memorial Hospital, Taiwan

<sup>2</sup>Department of General Surgery, Hsinchu Mackay Memorial Hospital, Taiwan

<sup>3</sup>Department of Obstetric and Gynecology, Hsinchu Mackay Memorial Hospital, Taiwan

<sup>4</sup>Department of Pathology, Hsinchu Mackay Memorial Hospital, Taiwan

### Abstract.

Colon cancer primarily spreads to the liver and lungs. However, colon cancer does periodically spread to the ovary and on very rare occasions metastasizes to the breast. Breast metastasis from primary colon cancer is extremely rare.

We presented the case of a 37 year-old woman suffering from colon cancer which had spread to the ovaries. After palliative chemotherapy, breast metastasis developed. The purpose of this study was to examine the patients' breast metastasis from colon cancer.

**Keywords :** breast metastasis, ovary metastasis, colon cancer

## 病例報告

# 大腸癌合併乳房轉移與卵巢轉移

鄭弘毅<sup>1\*</sup> 張建仁<sup>2</sup> 王卜瑾<sup>3</sup> 黃佩雯<sup>4</sup> 張國明<sup>4</sup>

<sup>1</sup>新竹馬偕紀念醫院 血液腫瘤科

<sup>2</sup>新竹馬偕紀念醫院 一般外科

<sup>3</sup>新竹馬偕紀念醫院 婦產科

<sup>4</sup>新竹馬偕紀念醫院 病理科

### 中文摘要

大腸癌的轉移病灶多數於肝與肺，而卵巢轉移多被報導。而原發性大腸癌合併乳房轉移則極為罕見。我們報導一位 37 歲女性病人診斷為大腸癌合併卵巢轉移，在緩和化學治療後又併發乳房轉移，並做文獻回顧及探討。

**關鍵字:** 大腸癌、乳房轉移、卵巢轉移

## INTRODUCTION

For the most part, metastatic colon cancer typically spreads to the liver and lungs. Occasionally, ovarian metastasis is involved. In our case, the patient's colon cancer had spread to the ovary, and which was later confirmed to have also metastasized to the breast.

Such extended oncological growth arising from a primary colon cancer is extremely rare, with a poor prognosis because it is usually indicative of disseminated disease [1].

We presented the case of a 37 year-old woman who was diagnosed with colon cancer with ovary me-

tastasis. After six-months of palliative chemotherapy, the patient developed breast metastasis. We also had a review the presentation, radiology, histology, and management of the patient's breast metastasis.

## CASE REPORT

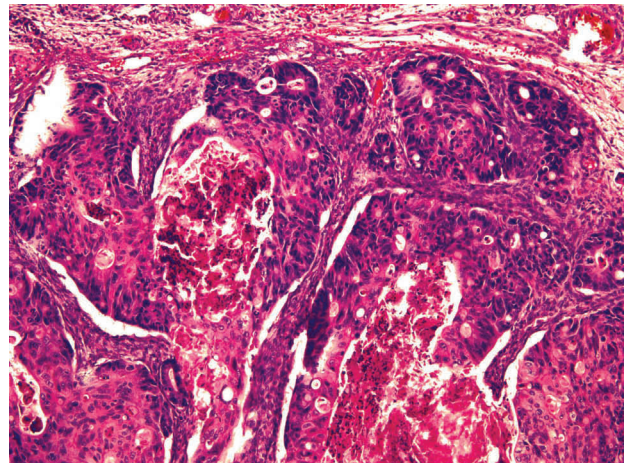
This 37 year-old female patient presented with severe lower abdominal pain. Subsequent to pelvic sonography a bilateral adnexal mass was found. Abdominal computerized tomography (CT) showed there were two large multilocular cystic masses in the lower abdomen with the upper one (15 cm in diameter) connected to the right ovarian vein and the lower mass (12.4 cm in diameter) connected to the left ovarian artery, suggesting ovarian cystic neoplasms (Figure 1). The patient was treated for ovarian cancer and received a total abdominal hysterectomy, and bilateral salpingo-oophorectomy. Post-surgical pathology (Figure 2) revealed metastatic adenocarcinoma testing positive for CK7, CK20 and CDX2, and negative for ER, PR and vimentin. Adenocarcinoma, mucinous/intestinal type was suspected, and thereafter metastases of the gastrointestinal tract origin was preliminarily diagnosed.

After a colonoscopy was performed, adenocarcinoma of the colon was diagnosed. However, colectomy was not undertaken due to systemic disease. The patient's condition stabilized after she received 12 cycles of post-operative, palliative chemotherapy irinotecan, 5FU, leucovorin (FOLFIRI) plus bevacizumab.

Approximately 14 months after diagnosis, patient had a painful breast mass, 3 cm in size, over her right breast. A breast echo examination (Figure 3) revealed



**Figure 1.** Colon cancer with ovarian metastasis, as a cystic mass



**Figure 2.** H&E stain, metastatic adenocarcinoma in ovary, adenocarcinoma, mucinous/intestinal type

distortion of right lateral breast tissue with axillary lymphadenopathy and suspected breast malignancy.

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\*Corresponding author: Hung-I Cheng M.D.

\*通訊作者：鄭弘毅醫師

Tel: +886-3-6119595 ext.6207

Fax: +886-3-5744560

E-mail: a4098@ms7.mmh.org.tw



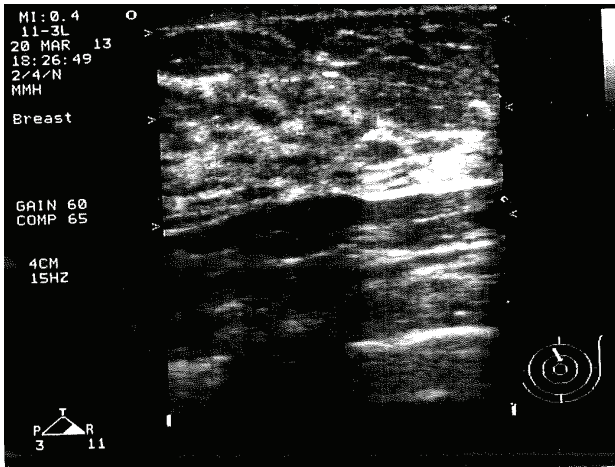


Figure 3. Breast echo, right breast mass

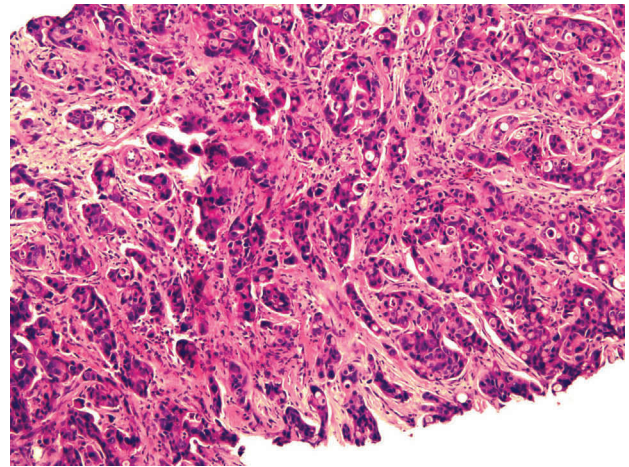


Figure 4. H&E stain. Metastatic adenocarcinoma in breast

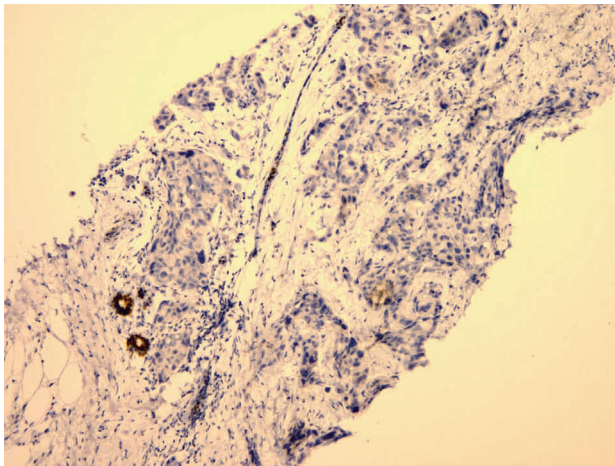


Figure 5. ER: negativity

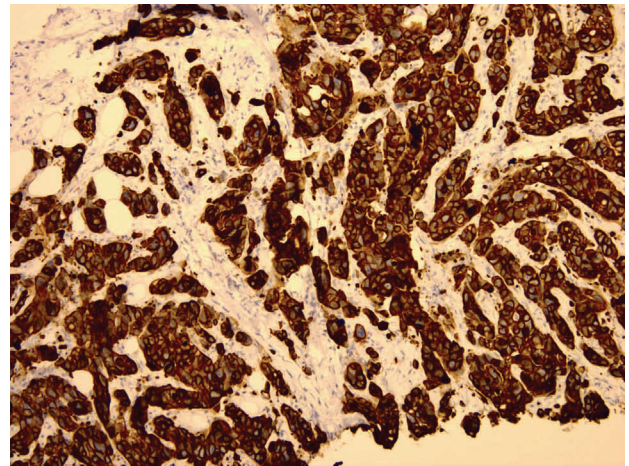


Figure 6. CD7 negativity

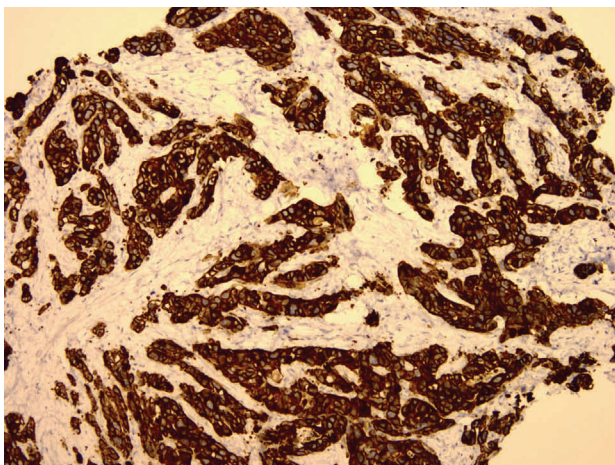


Figure 7. CD20 positivity

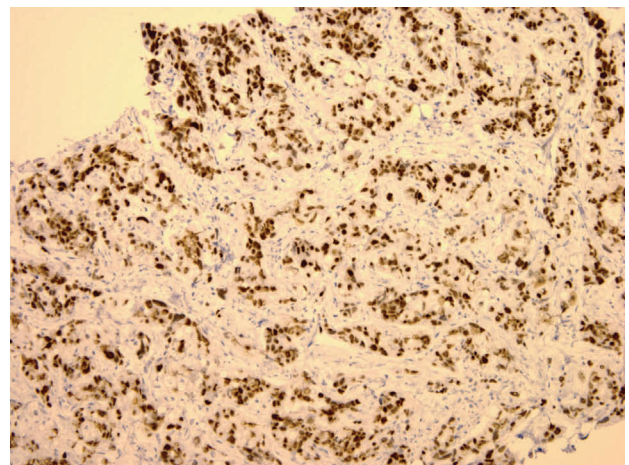


Figure 8. CDX2 positivity

**Table 1.** Breast metastases from primary colon cancer

Publish year	Case	Age	Gender	Location size	Primary	Metastasis in other locations	Survival after diagnosis
2000	1	42	female	R't upper outer 3 cm	-	peritoneum	6 months
1997	2	-	male	-	-	-	-
1997	3	-	female	-	-	-	-
1981	4	-	female	-	-	liver, skin	4 months
1981	5	-	female	-	-	-	-
2004	6	40	female	l't outer 4 cm	A-colon	peritoneum	4 years
2011	7	46	female	r't 1cm	sigmoid	disseminated	16 months
2011	8	37	female	l't outer 1 cm	sigmoid	-	-
2014	9	38	female	l't, 9 cm	A-colon	ovarian	-
present	10	37	female	r't 4 cm	A-colon	ovarian	4 months

Survival: time of survival from diagnosis of breast metastasis

- : not mentioned

A-colon: ascending colon

Therefore, a fine needle biopsy was done. Her pathology testing (Figure 5-8) revealed that the tumor cells were all positive for CK7 and CK20, subtotally positive for CDX2, and negative for ER and PR. The overall features were compatible with metastatic adenocarcinoma of the colonic origin. Resection of breast tumor was not performed and the patient received 2<sup>nd</sup> line palliative chemotherapy of oxliplatin, 5FU, and leucovorin (FOLFOX) for 10 cycles. The patient expired from multiple metastasis 20 months after diagnosis.

## DISCUSSION

Colorectal cancer is the third most common type of cancer in the world. Metastases to the regional lymph nodes can be found in 40-70% of patients at the time of diagnosis. When colorectal cancer is localized and staged, the five-year survival rate after resection is about 90%. Otherwise, metastases to the liver, lung, and bone occurs frequently, and more distant metastases to the ovaries and adrenals are indicated on poor prognosis. Recently, patients with solitary liver metastasis could be treated by hepatic resection where after more favorable outcomes were attained [2,3].

Breast metastases are very rare in comparison with primary breast malignancy. The most common primary tumor is contralateral breast cancer, followed by leukemia, melanoma, lymphoma, ovary, lung, and gastric cancer [4]. Breast metastasis from primary colon cancer is extremely rare. Fewer than 20 cases have been reported in the literature (Table 1).

Most breast metastases are characterized as easily palpable, mobile masses with rapid growth. The most common site is the upper out quadrant. Sometimes, breast metastases adhere to the skin but they do not cause skin or nipple retraction, or nipple discharge [5]. Like primary breast malignancy, axillary lymph node metastases are presented in some cases [6]. Mammographic evaluation can be useful in making a differential diagnosis. The typical mammographic findings are rounded, well-circumscribed masses without spiculation, microcalcification, or thickening of the skin. Excisional or incisional biopsy is the most commonly used procedure for diagnosis [7].

Histopathologically, primary breast carcinomas are CK7 positive, CK20 negative, and positive for at least one of the recognized breast markers (ER, PR, Her2, GCDP15, BCA). Typically, colorectal carcino-

mas are positive for CK20, whereas this is unusual in the case of primary breast carcinomas. When a breast tumor is positive for CK20 and CDX2 and negative for all breast markers, this identifies the tumor as being colon cancer metastatic to the breast [8].

Therapeutically, most patients are associated with disseminated metastatic disease which implies a poor prognosis. The major treatment for these patients is palliative chemotherapy. In such cases, surgical excision has a limited role to play other than palliation. However, simple mastectomy is sometimes indicated if a sizeable, painful mass is involved [2]. Barthelmes et al. advocated that surgical excision should be avoided due to the possibility of short life expectancy and the risk of tumor seeding to the skin [7,9].

## CONCLUSIONS

In conclusion, colon cancer with breast metastases is a rare condition. For most of these cases, disseminated disease is usually indicated, with poor patient prognosis. A breast mass should be diagnosed correctly using a core needle and IHC in part to avoid unnecessary mastectomy for breast metastasis and standard systemic treatment should be considered for palliation.

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