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International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Invasive pleomorphic lobular carcinoma of the breast with multiple metastases: A case report

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ARTICLE INFO

Article history:

Received 23 December 2020
Received in revised form 17 January 2021
Accepted 17 January 2021
Available online 20 January 2021

Keywords:

Invasive pleomorphic lobular carcinoma
Metastasis
Case report

ABSTRACT

INTRODUCTION AND IMPORTANCE: IPLC (Invasive Pleomorphic Lobular Carcinoma) accounts for less than 1% of breast cancer. To the best of our knowledge, this is one of the few reported cases in the IPLC with multiple metastases. The patient's general condition got improved after our treatment, which has a certain reference for the treatment of this kind of patient in the future.

CASE PRESENTATION: A 42-year-old female with IPLC and multiple metastases. The IPLC malignant cells were positive for p120 (cytoplasmic) and human epidermal growth factor receptor 2, negative for estrogen receptor, progesterone receptor, and E-cadherin. There were nodular enhancement foci in the liver, which are considered the metastatic lesions of the breast, and the liver function was abnormal. Multiple metastatic lesions of the vertebral body, appendage of the whole spine, and sternum. And C7, T1, and T9 vertebrae showed compression fractures.

CLINICAL DISCUSSION: IPLC has systemic metastasis which molecular typing by immunohistochemistry is HER-2 overexpression can choose chemotherapy combined with targeted therapy to prolong the survival time and improve the quality of life of patients. The patient was followed up.

CONCLUSIONS: This paper reports a case of IPLC with multiple metastases and gives review literature. Our treatment of the patient can be a reference for other clinicians.

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1. Introduction

IPLC is a subtype of ILC (Invasive Lobular Carcinoma), which is more aggressive and has its unique clinicopathological features. This paper reports a case of IPLC with multiple metastases and gives review literature. Our treatment benefits the patient, which has a certain reference significance for future treatment of the disease. This work has been reported in line with the SCARE 2020 criteria [1].

2. Case presentation

A 42-year-old female was sent to the breast department on March 20, 2020, due to the discovery of a left breast mass for 2+ months. No drug history, no family history including any relevant genetic information, and no psychosocial history.

- (1) Physical examination: two masses of 2.0 cm × 2.0 cm and 2.0 cm × 1.0 cm in size were palpated respectively on the left breast at 5 cm away from the nipple at 9–10 o'clock and 6 cm at 11 o'clock, which were firm, with unclear boundary, no swelling, and nontender.
- (2) Auxiliary examination: mammography (Fig. 1): clusters of pleomorphic calcifications were found in the posterior part of the middle and upper part of the left breast, BI-RADS: 4B. Color Doppler ultrasound: 2.0 cm × 1.2 cm hypoechoic mass was found at 10 o'clock and 3–4 cm away from the nipple on the left breast. Breast MRI (Fig. 2): non-mass like enhancement in the upper and middle-upper breast, enlargement of left axillary lymph nodes, and metastasis are not excluded.

Pathologic diagnosis by core needle biopsy: (left breast at 9–10 o'clock): IPLC; IHC: E-cadherin (-), ER (-), p63 (-), PR (-), Ki67 (+, 30%), p120 (+), HER-2 (2+); Fluorescence in situ hybridization suggests HER-2 overexpression. (left breast at 11 o'clock): IHC: E-cadherin (-), ER (3+, 65%), PR (3+, 80%), HER-2 (3+), Ki67 (+, 8%), CK5 / 6 (myoepithelial +).

Chest and abdomen enhanced CT (Fig. 3): 1) considering multiple origin breast cancer with extensive osteolytic destruction and pathological compression fracture of thoracic vertebra 9. 2) there was nodular enhancement lesion in the liver, not excluding the possibility of metastatic lesions. MRI of the whole spine (Fig. 4):

Abbreviations: IPLC, Invasive Pleomorphic Lobular Carcinoma; ILC, Invasive Lobular Carcinoma; IDC, Invasive Ductal Carcinoma; DFS, Disease-Free Survival; DSS, Disease-Specific Survival.

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<https://doi.org/10.1016/j.ijscr.2021.01.075>

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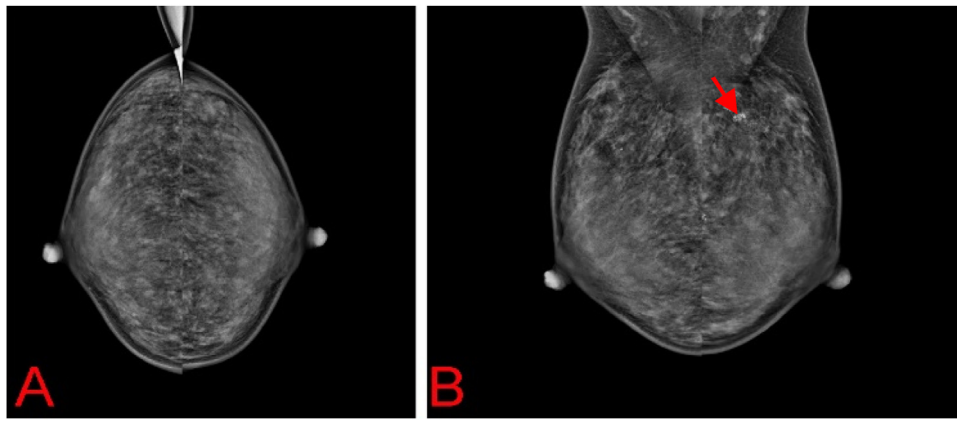


Fig. 1. Mammography.

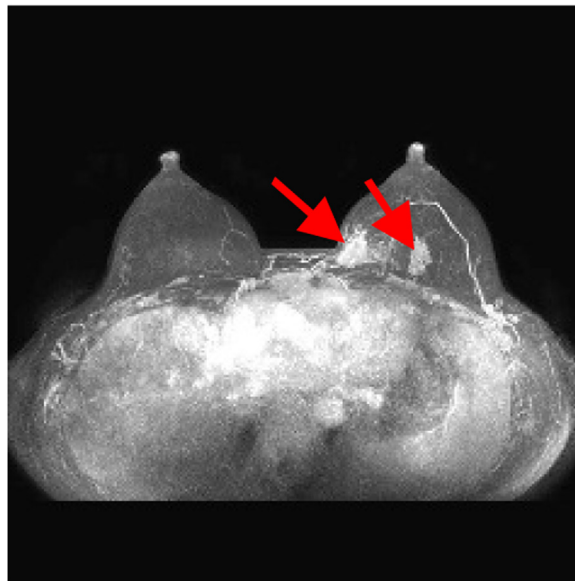


Fig. 2. Breast MRI.

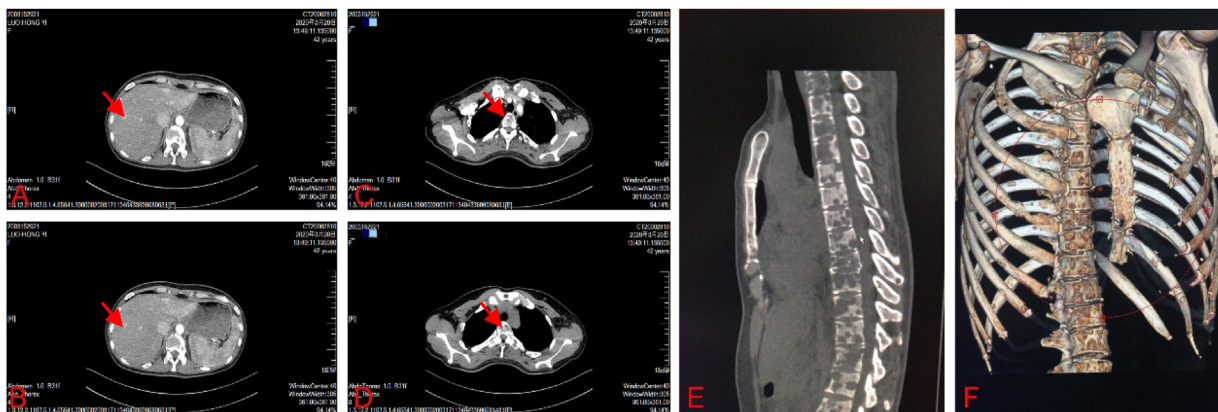


Fig. 3. Chest and abdomen enhanced CT.

multiple abnormal signals of the vertebral body, appendages, and sternum of the whole spine; manifestations of compression fractures of C7, T1, and T9 vertebrae (mostly pathological fractures), and multiple metastases were considered. DR of limbs: osteolytic destruction possibility of the bilateral ilium, right sitting pubis, left pubis, left femoral neck, and bilateral upper humerus.

Liver function showed that transaminase was significantly increased, albumin was low, bilirubin was high, and coagulation function was significantly abnormal. Abdominal color Doppler ultrasound showed that there were free anechoic areas in each space of the abdominal cavities, with a maximum depth of 5.6CM.

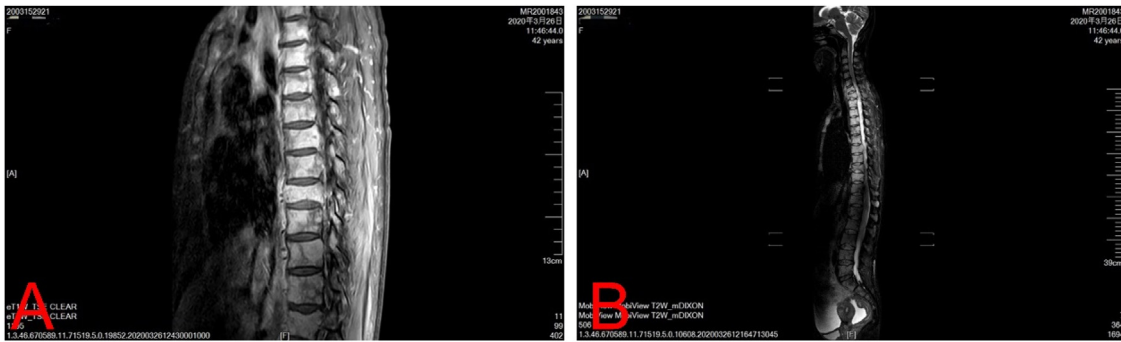


Fig. 4. Whole spine MRI.

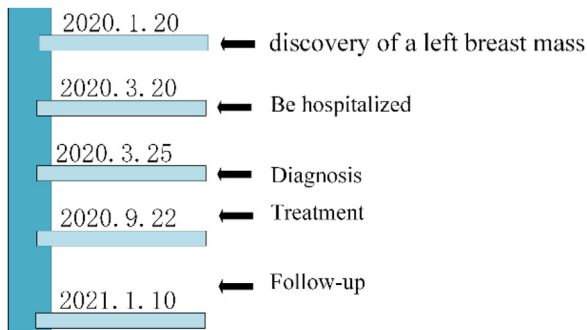


Fig. 5. Timeline.

- (3) Diagnosis: IPLC (stage IV, liver metastasis, bone metastasis).
- (4) Treatment: Treated with PH (Paclitaxel for Injection (Albumin Bound) + Trastuzumab Injection), 9 cycles. At the same time, zoledronic acid was used to prevent bone adverse events. Ping Ning, chief physician and the director of the breast Department, performed the procedure. The patients accepted the treatment plan. Grade IV leucopenia and neutropenia occurred during the treatment.
- (5) Follow-up (in the outpatient department): in 2020-10, The patient had headache, drowsiness, blurred consciousness, memory loss, unclear speech, blurred vision, and weakened muscle strength of limbs. Cranial MRI showed Meningeal enhancement with nodule formation, scattered abnormal signals in brainstem and pons, abnormal signals in thalamus and cortex, brain metastasis, and meningeal carcinoma should be considered. Then, the patient was treated with Pyrotinib Maleate Tablets 400 mg QD and capecitabine 1500 mg Bid (capecitabine oral d1-14, 21 days as a cycle). When breast MRI and chest CT were reexamined in 2021-01, it suggests that her condition is under control.
- (6) Timeline: the timeline is shown in Figs. 4 and 5.

3. Discussion

IPLC is a subtype of ILC [2], but it has special pathological features, including enlarged and irregular nuclei, hyperchromatic, prominent nucleoli, enhanced mitotic activity, and abundant eosinophilic cytoplasm [3,4]. The nuclei size of IPLC is almost four times that of lymphocytes, while the nuclei size of classic ILC is usually only 1–2 times that of lymphocytes [5].

Compared with classic ILC, IPLC showed more lymph node involvement [6], older age, lower median survival time [7], higher TNM stage, higher histological grade [8], and high expression of Ki-67.

At the molecular level, the expression of E-cadherin was mostly absent or abnormal in IPLC [9,10]. The positive rates of estrogen and progesterone receptors were low, and the positive rate of HER-2 was high [11,12].

In terms of gene mutation, three large-scale studies [13–15] reported molecular changes in ILC. Among the three studies, some of the most common changes detected were CDH1 (42.8%–65%), PIK3CA (34.8 %–48 %), Tbx3 (9 %–13.3 %), FoxA1 (7 %–9 %), GATA3 (5 %–7.1 %), MAP3K1 (5.1 %–6 %) and AKT1 (2.5 %–5.1 %). Although the molecular characteristics of IPLC have not been elucidated, as a subtype of ILC, it has the basic molecular characteristics of ILC. Studies have shown that IPLC has a higher frequency of ERBB2 mutations [7,16], which is considered as a target of anti ERBB2 drugs. Besides, the IRS2 mutation found by Zhu Sha et al. in IPLC enhanced the invasiveness [17].

Compared with ILC and IDC (Invasive Ductal Carcinoma), it has not been proved that IPLC itself affects its prognosis [18]. Some studies have shown that in the multivariate model, polymorphic histology has nothing to do with the reduction of DFS [19,20] (Disease-Free Survival), nor does it affect DSS [7] (Disease-Specific Survival). However, due to its high histological grade and increased lymph node involvement, the prognosis of IPLC is poor [6,21]. Anyway, a large number of clinical data are still needed to confirm the impact of IPLC on prognosis.

It has been reported that ILC metastasized to the pancreas, uterus, gastrointestinal tract, urinary tract, reproductive organs, and retroperitoneal organs after a long disease-free interval [5]. Compared with ILC, IPLC has more metastatic diseases [19]. The most common distant metastases of IPLC are bone, lung, liver, and brain metastases. Besides, in previous studies, leptomeningeal metastasis [22], pancreatic metastasis [5], and so on.

This paper reports a rare case of IPLC with multiple systemic metastases (bone metastasis and liver metastasis) (ER and PR negative, HER-2 overexpression). After 9 cycles of PH (Paclitaxel for Injection (Albumin Bound) + Trastuzumab Injection) treatment, the disease progressed and brain metastasis occurred. Then we used the treatment (Pyrotinib Maleate Tablets and Capecitabine) for the patient. Now, the patient’s condition is stable after follow-up. In the diagnosis and treatment of this disease, it can provide some reference for other clinicians. At the same time, further research is needed to gain more understanding of this rare tumor and determine future treatment strategies.

4. Conclusion

This paper reports a rare case of IPLC with multiple metastases in the whole body, which is useful for the diagnosis and treatment of this disease in the future. Our treatment provides a reference for other clinicians.

Declaration of Competing Interest

The authors report no declarations of interest.

Funding

None.

Ethical approval

The study is exempt from ethical approval in our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

XRC wrote the manuscript. CXT and LL were responsible for the collation of references and statistics of patient information. PN was the doctor in charge of the patient.

Registration of research studies

Not applicable.

Guarantor

Ping Ning.

Provenance and peer review

Not commissioned, externally peer-reviewed.

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