

Invasive Pleomorphic Lobular Carcinoma of the Breast With Multiple Metastases: a Case Report

Xiangrong Chen

Chengdu Women and Children's Central Hospital

Lei Lei

Chengdu Women and Children's Central Hospital

Chunxiang Tian

Chengdu Women and Children's Central Hospital

Ping Ning (✉ zhang03091354@163.com)

Chengdu Women and Children's Central Hospital <https://orcid.org/0000-0002-8494-5348>

Case Report

Keywords: Invasive pleomorphic lobular carcinoma, Multiple metastases, Case report

Posted Date: December 4th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-120208/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published at International Journal of Surgery Case Reports on March 1st, 2021. See the published version at <https://doi.org/10.1016/j.ijscr.2021.01.075>.

Abstract

Background: Invasive pleomorphic lobular carcinoma (IPLC) accounts for less than 1% of breast cancer, and the proportion is lower when systemic metastasis occurred. This paper reports a case of IPLC with multiple metastases and gives review literature.

Case presentation: A 42-year-old female with IPLC and multiple metastases. There was nodular enhancement lesion in the liver and liver function showed that transaminase was significantly increased, albumin was low, bilirubin was high, and coagulation function was significantly abnormal. Multiple abnormal signals of the vertebral body, appendages, and sternum of the whole spine; manifestations of compression fractures of C7, T1, and T9 vertebrae.

Conclusions: To the best of our knowledge, this is one of the few reported cases in the IPLC with multiple metastases. For patients with IPLC, we should improve the whole body examination to prevent the omission of metastatic lesions.

Background

IPLC is a subtype of invasive lobular carcinoma (ILC), which is more aggressive and has its unique clinicopathological features. Compared with classic ILC, IPLC seems to have more distant metastasis, and its metastasis mechanism is also different. Its incidence rate is low, and there are few reports. This paper reports a case of IPLC with multiple metastases.

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.

(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 activity, 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.

Hollow needle aspiration biopsy: (left breast at 9–10 o'clock): IPLC; IHC: E-cadherin (-), ER (-), p63 (-), PR (-), HER-2 (2 +), Ki67 (+, 30%), p120 (+); fish: 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): 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.

(3) Diagnosis: IPLC (stage IV, liver metastasis, bone metastasis).

(4) Treatment: Treated with TH (albumin-bound paclitaxel + trastuzumab for injection) combined with the patient's condition, since the patient was with subacute liver failure and decompensated cirrhosis.

Discussion

IPLC is a subtype of ILC[1], but it has special pathological features, including enlarged and irregular nuclei, hyperchromatic, prominent nucleoli, enhanced mitotic activity, and abundant eosinophilic cytoplasm[2, 3]. 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[4].

Compared with classic ILC, IPLC showed more lymph node involvement[5], older age, lower median survival time[6], higher TNM stage, higher histological grade[7], and high expression of Ki-67.

At the molecular level, the expression of E-cadherin was mostly absent or abnormal in IPLC[8, 9]. The positive rates of estrogen and progesterone receptors were low, and the positive rate of HER-2 was high[10, 11].

In terms of gene mutation, three large-scale studies[12–14] 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[6, 15], 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[16].

Compared with ILC and IDC, it has not been proved that IPLC itself affects its prognosis[17]. Some studies have shown that in the multivariate model, polymorphic histology has nothing to do with the reduction of DFS[18, 19], nor does it affect DSS[6]. However, due to its high histological grade and increased lymph

node involvement, the prognosis of IPLC is poor[5, 20]. However, 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[4]. Compared with ILC, IPLC has more metastatic diseases[18]. The most common distant metastases of IPLC are bone, lung, liver, and brain metastases. Besides, in previous studies, leptomeningeal metastasis[21], pancreatic metastasis[4], and so on.

Conclusion

This paper reports a rare case of IPLC with multiple metastases in the whole body. At the same time, further research is needed to obtain more understanding of this rare tumor and to determine the future treatment strategy.

Declarations

Ethics approval and consent to participate

This case was approved by the ethical committee of Chengdu Women's and Children's Central Hospital.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Funding

Not applicable.

Authors' contributions

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.

Acknowledgments

Not applicable.

References

1. Vajpeyi R. WHO Classification of Tumours: Pathology and Genetics of Tumours of the Breast and Female Genital Organs. *J Clin Pathol* 2005;58:671–2.
2. Abdelkader A, Jorns JM. Pleomorphic Lobular Carcinoma: A Controversially Aggressive Variant of Invasive Lobular Carcinoma of the Breast. *Int J Surg Pathol* 2017;26:434–6.
3. Jacobs M, Fan F, Tawfik O. Clinicopathologic and biomarker analysis of invasive pleomorphic lobular carcinoma as compared with invasive classic lobular carcinoma: an experience in our institution and review of the literature. *Ann Diagn Pathol* 2012;16:185–9.
4. Sun X, Zuo K, Huang D, Yu B, Cheng Y, Yang W. Pancreatic metastasis from invasive pleomorphic lobular carcinoma of the breast: a rare case report. *Diagn Pathol* 2017;12:52–52.
5. Sahin S, Karatas F, Erdem GU, Hacıoglu B, Altundag K. Invasive Pleomorphic Lobular Histology Is an Adverse Prognostic Factor on Survival in Patients with Breast Cancer. *Am Surg* 2017;83:359–64.
6. Yang LP, Sun HF, Zhao Y, Chen MT, Zhang N, Jin W. Clinicopathological characteristics and survival outcomes in pleomorphic lobular breast carcinoma of the breast: a SEER population-based study. *Cancer Med* 2017;6:2867–75.
7. Altundag K. Prognosis of women with invasive pleomorphic lobular carcinoma compared with classical invasive lobular carcinoma: Still debatable issue? *J Buon* 2017;22:1086–7.
8. Reis-Filho J. Pleomorphic lobular carcinoma of the breast: role of comprehensive molecular pathology in characterization of an entity. *J Pathol* 2005;17:1–13.
9. Lourdes PJ, Irene GG, Eugenia RCM, Ignacio PP, Belén PM, Víctor AA, et al. Pleomorphic lobular carcinoma of the breast with osteoclast-like giant cells: A case report and review of the literature. *Diagn Pathol* 2018;13:1–6.
10. Al-Baimani K, Bazzarelli A, Clemons M et al. Invasive Pleomorphic Lobular Carcinoma of the Breast: Pathologic, Clinical, and Therapeutic Considerations. *Clin Breast Cancer* 2015;15:421–5.
11. Ding Q, Chen H, Lim B, Damodaran S, Chen W, Tripathy D, et al. HER2 somatic mutation analysis in breast cancer: correlation with clinicopathological features. *Hum Pathol* 2019;1:32–8.
12. Michaut M, Chin SF, Majewski I, Severson TM, Bernards R. Integration of genomic, transcriptomic and proteomic data identifies two biologically distinct subtypes of invasive lobular breast cancer. *Sci Rep* 2016;6:18517–18517.
13. Desmedt C, Zoppoli G, Gundem G, Pruneri G, Larsimont D, Fornili M, et al. Genomic Characterization of Primary Invasive Lobular Breast Cancer. *J Clin Oncol Off J Am Soc Clin Oncol* 2016;34:1872–81.
14. Ciriello G, Gatza M L, Beck A H et al. Comprehensive Molecular Portraits of Invasive Lobular Breast Cancer. *Cell* 2015;163:506–19.
15. Rosa-Rosa J, Caniego-Casas T, Leskela S, Cristobal E, González-Martínez S, Moreno-Moreno E, et al. High Frequency of ERBB2 Activating Mutations in Invasive Lobular Breast Carcinoma with Pleomorphic Features. *Cancers (Basel)* 2019;11:74.

16. Zhu S, Ward BM, Yu J, Matthew-Onabanjo AN, Janusis J, Hsieh C-C, et al. IRS2 mutations linked to invasion in pleomorphic invasive lobular carcinoma. *JCI INSIGHT* 2018;3. <https://doi.org/10.1172/jci.insight.97398>.
17. Rakha EA, Van Deurzen CHM, Paish EC, Macmillan RD, Ellis IO, Lee AHS. Pleomorphic lobular carcinoma of the breast: is it a prognostically significant pathological subtype independent of histological grade? *Mod Pathol* 2013;26:496–501.
18. Buchanan CL, Flynn LW, Murray MP, Darvishian F, Cranor ML, Fey J V, et al. Is pleomorphic lobular carcinoma really a distinct clinical entity? *J Surg Oncol* 2008;98:314–7. <https://doi.org/10.1002/jso.21121>.
19. Narendra S, Jenkins SM, Khor A, Nassar A. Clinical outcome in pleomorphic lobular carcinoma: a case-control study with comparison to classic invasive lobular carcinoma. *Ann Diagn Pathol* 2015;19:64–9. <https://doi.org/10.1016/j.anndiagpath.2015.01.005>.
20. Waqar, Haque, Ashley, Arms, Vivek, Verma, et al. Outcomes of pleomorphic lobular carcinoma versus invasive lobular carcinoma. *The Breast* 2018;1:67–73.
21. Lin-Ying, Chen, Yun-Bi, Ni, Maribel, D, et al. Skull bone metastasis with adjacent leptomeningeal involvement from pleomorphic lobular carcinoma of the breast. *Histopathology* 2015;66:1051–3.

Figures

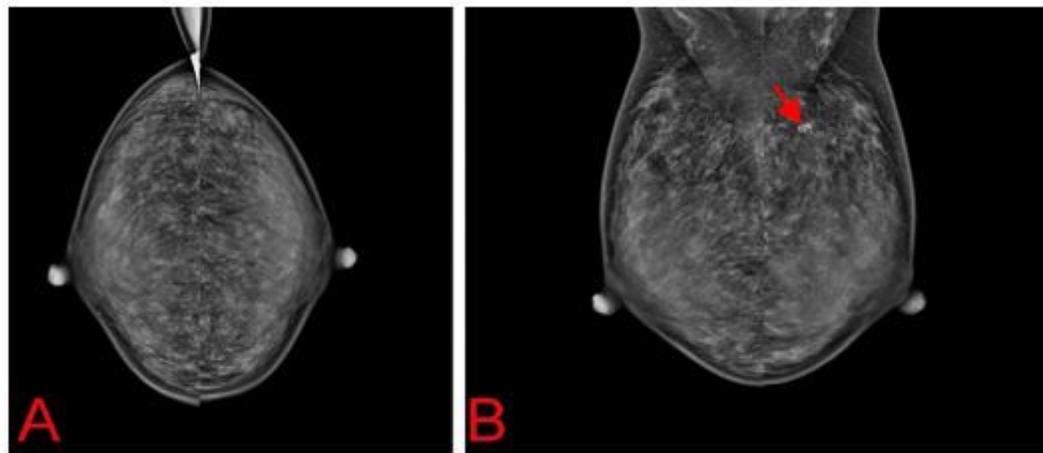


Figure 1

Mammography

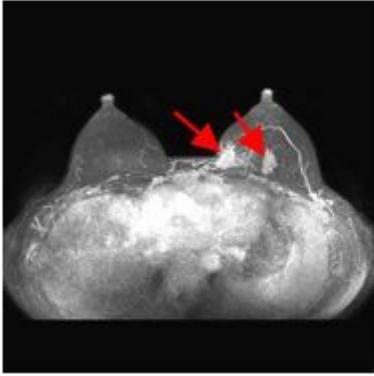


Figure 2

Breast MRI

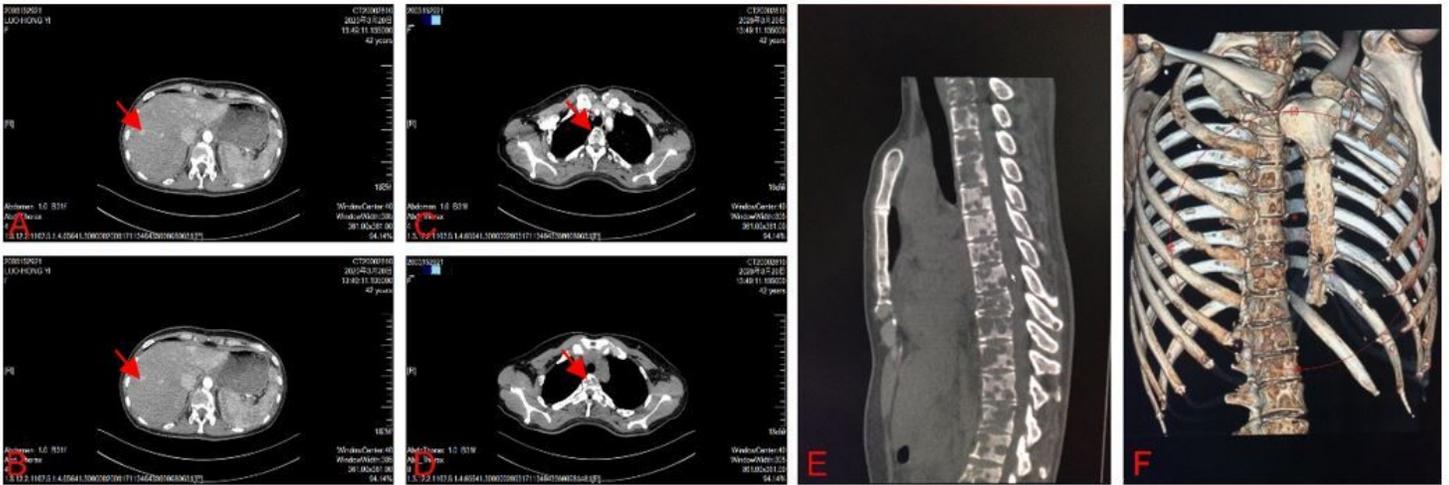


Figure 3

Chest and abdomen enhanced CT



Figure 4

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [CAREchecklistEnglish2013.pdf](#)