Invasive micropapillary carcinoma of the breast in a male patient: Report of a case

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ABSTRACT

INTRODUCTION: We report a rare case of invasive micropapillary carcinoma in the male breast.
PRESENTATION OF CASE: A 63-year-old man was referred to our hospital for investigation of a left breast tumor, which could be palpated in the upper lateral quadrant of the left nipple-areola complex. The tumor invaded the areola skin. Ultrasonography showed a 14.8 × 15.0 × 12.4 mm low echoic mass, with an irregular lobulated border. Core needle biopsy indicated invasive ductal carcinoma, but the subtype could not be accurately determined. Mastectomy with axillary lymph node dissection was performed. Pathological examination indicated invasive micropapillary carcinoma, no lymph node metastasis, and a nuclear grade of 2. Immunohistochemical examination showed positive staining for estrogen and progesterone receptors, but negative staining for HER2. The Ki67 index was 5%. Tamoxifen was administered, and recurrence has not been noted for 1 year.

DISCUSSION: Women’s IMPC generally shows a high HER2 positivity rate. However, HER2 positivity was noted in only 1 male patient with IMPC (14%) according to our literature review. Furthermore, in all cases of the mixed type that were reviewed, IMPC was associated with papillotubular carcinoma. These findings may be specific to IMPC in male patients.

CONCLUSION: IMPC is associated with a high rate of lymph node metastasis or recurrence and advanced vessel invasion, aggressive adjuvant chemotherapy following surgical resection should be selected for patients with IMPC.

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1. Introduction

Invasive micropapillary carcinoma (IMPC) is a subtype of invasive ductal carcinoma, first reported by Siriaunkgul et al. [1] in 1993. IMPC accounts for 3.8–5.9% of all cases of breast cancer and occurs most frequently in women aged 50–60 years [2–5]. It is characterized by a high incidence of lymphovascular invasion and lymph node metastasis, resulting in poor prognosis [2–5]. Here, we describe a rare case of IMPC in a male patient who did not show lymph node metastasis or lymphovascular invasion and review the relevant literature.

2. Case report

A 63-year-old man with paralysis of the extremities due to spinal injury was referred to our hospital for investigation and treatment of a left breast tumor. On physical examination, a hard, elastic tumor was palpated in the upper lateral quadrant of the left nipple-areola complex and the tumor was found to invade the areola skin (Fig. 1). Ultrasonography showed a 14.8 mm × 15.0 mm × 12.4 mm irregularly shaped well-circumscribed, solid mass with an indented margin and heterogeneous internal echo (Fig. 2). However, posterior echo enhancement was not observed. Contrast-enhanced computed tomography showed an approximately 13-mm nodular lesion below the nipple. The area surrounding the mass appeared fuzzy, indicating tumor invasion of the nipple. Neither lymph node metastases nor distal metastasis was noted. Core needle biopsy revealed clusters of atypical cells, indicating a diagnosis of invasive ductal carcinoma; however, accurate determination of the pathological subtype before surgery was not possible. We tried to detect sentinel lymphnode by near-infrared fluorescence imaging system, however we could not do it. Therefore we performed mastectomy with axillary lymphnode dissection. Examination of the cut surface of the resected specimen showed that the tumor was solid with a spiculated border. It invaded the nipple and the skin (Fig. 3). Pathological examination revealed actively proliferating cancer cells arranged in micropapillary nests. The cells were floating within clear spaces lined by delicate strands of stroma (Fig. 4a). Micropapillary nests were composed of dozens of cancer cells without fibrovascular...
cores and were surrounded by empty, clear spaces lined with delicate strands of fibrocollagenous stroma (Fig. 4b). These findings led to a diagnosis of invasive micropapillary carcinoma. The tumor was a mixed type, and papillotubular carcinoma accounted for approximately 40% of the tumor (Fig. 4c). Lymph node metastasis was not detected, and the nuclear grade was classified as 2. Immunohistochemical examination showed positive staining for estrogen (ER) and progesterone (PgR) receptors, but negative staining for HER2. The Ki67 index was 5%. Tamoxifen has been administered, and no recurrence has been noted for approximately 1 year after surgery.

3. Discussion

IMPC was recently assigned a separate classification according to the World Health Organization (WHO) histological classification of breast tumors (2003) [6] and the general rules for clinical and pathological recording of breast cancer (16th edition, 2008) [7] in Japan. IMPC in male patients is very rare, with only 7 cases with complete details being described in the literature as per a Medline and Japan Medical Abstracts Society search (Table 1) [8–14]. The average age of male patients with IMPC is 69.8 years, slightly higher than that of female patients with IMPC.

The reported pathological characteristics of IMPC include cancer cells floating within clear spaces lined by delicate strands of stroma and micropapillary nests composed of dozens of cancer cells without fibrovascular cores surrounded by empty, clear spaces lined with delicate strands of fibrocollagenous stroma [1–7]. We were unable to detect these features in the case reported here; however, cancer cells frequently show reversed polarity, a cytological morphology referred to as an inside-out growth pattern.

The incidence of axillary node metastasis in IMPC is reported to be 67–90% [2–5], and 64% of patients with lymph node metastasis have more than 3 lymph nodes [5]. IMPC is also associated with a high rate of local recurrence. Tresserra et al. reported that 27% of IMPC patients who underwent lumpectomy showed local recurrence, although 75% of these patients had received radiation treatment [15]. Authors concluded that lumpectomy is inadequate for local control even when complemented with radiotherapy. Our patient did not show recurrence during a follow-up period of approximately 1 year after mastectomy with axillary lymph node dissection. Accordingly, we suggest that radical mastectomy with complete axillary dissection be performed when IMPC is diagnosed on the basis of preoperative biopsy findings. Some studies suggest that IMPC is associated with a poorer prognosis than other invasive ductal carcinomas. Pettinato et al. reported that 49% of patients with IMPC died of distant metastasis at a mean of 5.2 years (range, 1–10.5 years) after initial diagnosis [5]. IMPC often occurs in association with other types of breast carcinoma. Cases in which IMPC accounted for more than 50% of the tumor were associated with a significantly higher rate of lymph node metastasis and recurrence at 5 years and a poorer prognosis than cases in which IMPC accounted for less than 50% of the tumor [16]. In fact, all male patients with pure IMPC reported in the literature died of recurrence or distant metastasis (Table 1). In our case, the IMPC component accounted for 60% of the lesion. Accordingly, the proportion of the IMPC component might be an important factor for prognosis.

Luna-More et al. reported ER, PgR, and HER2 positivity rates of 71.3%, 48.3%, and 51%, respectively [17]. Pettinato also described a high HER2 positivity rate (95%) [5]. However, HER2 positivity was noted in only 1 male patient with IMPC (14%) according to our literature review. Furthermore, in all cases of the mixed type that were reviewed, IMPC was associated with papillotubular carcinoma. These findings may be specific to IMPC in male patients.
4. Conclusion

Little is known about the effects of endocrine therapy, chemotherapy, molecular targeted therapy, or radiation on IMPC, and the optimal adjuvant therapy has not yet been established yet. Because of the absence of lymph node metastasis and a molecular subtype of luminal A, we only administered tamoxifen and regularly followed-up our patient. Furthermore, because our patient was physically challenged, he did not wish to receive chemotherapy. However, given that IMPC is associated with a high rate of lymph node metastasis or recurrence and advanced vessel invasion, aggressive adjuvant chemotherapy following surgical resection should be selected for patients with IMPC.

Conflicts of interest

The authors declared that they have no conflict of interest.

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Ethical approval

Written informed consent has been obtained by the patient.
Author contributions

Takaaki Tsushima analyzed and interpreted the patient data and drafted the manuscript. Hiromi Ohnishi performed the histological examination of the tumor. Takasuke Harada, Hirohito Mori, and Yoshitaka Ikeda critically revised the manuscript.

All authors read and approved the final manuscript.

References

[1]. Siriaunkgul S, Tavassoli FA. Invasive micropapillary carcinoma of the breast. Modern Pathol 1993;6:660–2.
[2]. Nassar H, Wallis T, Andea A, Dey J, Adsay V, Visscher D. Clinicopathologic analysis of invasive micropapillary differentiation in breast carcinoma. Modern Pathol 2001;14:836–41.
[3]. Guo X, Chen L, Lang R, Fan Y, Zhang X, Fu L. Invasive micropapillary carcinoma of the breast: association of pathologic features with lymph node metastasis. Am J Clin Pathol 2006;126:740–6.
[4]. Kuroda H, Sakamoto G, Ohnisi K, Itoyama S. Clinical and pathologic features of invasive micropapillary carcinoma. Breast Cancer 2004;11:169–74.
[5]. Pettinato G, Manivel CJ, Panico L, Sparano L, Petrella G. Invasive micropapillary carcinoma of the breast: clinicopathologic study of 62 cases of a poorly recognized variant with highly aggressive behavior. Am J Clin Pathol 2004;121:857–65.
[6]. Tavassoli FA, Devilee P. World Health Organization classification of tumors. Pathology and genetics of tumors of the breast and female genital organs. Lyon, France: IARC Press; 2003. p. 35–6.
[7]. The Japanese Breast Cancer Society. General rules for clinical and pathological recording of breast cancer. 16th ed. Tokyo: Kanehara Shuppan; 2008 [In Japanese].
[8]. Erhan Y, Erhan Y, Zekioslu O. Pure invasive micropapillary carcinoma of the male breast: report of a rare case. Clin J Surg 2005;48:156–7.
[9]. Nomura T, Miyoshi K, Nakagawa T, Uda K, Motoi M. A case of invasive micropapillary carcinoma of the male breast. Jpn J Breast Cancer 2011;26:97–102 [in Japanese with English abstract].
[10]. Shimizu T, Muto I, Okada T, Aono T. A case of male breast cancer presented histological findings of invasive micropapillary carcinoma. J Jpn Surg Assoc 2008;69:2794–8 [in Japanese with English abstract].
[11]. Minoshima A, Kato T, Yoshiba A, Hira S, Ichihara S, Gotoda H, et al. A case of invasive micropapillary carcinoma of the male breast. Jpn J Soc Clin Cytol 2012;51:409–14 [in Japanese with English abstract].
[12]. Kawauchi J, Hagino H, Shimoyama R, Nakayama F, Watanabe K, Shimizu H. A case of invasive male micropapillary breast carcinoma detected by core needle biopsy. Rinsho Geka 2011;66:107–9 [in Japanese].
[13]. Nagai S, Tsuchiya S, Sato H, Yokoyama M, Tamura K, Sugisaki Y. A case of invasive micropapillary carcinoma of the male breast. Jpn J Soc Clin Cytol 2006;45:259–62 [in Japanese with English abstract].
[14]. Akamatsu S, Himeji Y, Matsuda M, Nagasawa Y, Yamada M, Itagaki Y, et al. A case of invasive micropapillary carcinoma of the male breast. Jpn J Soc Clin Cytol 2002;41:278–80 [in Japanese with English abstract].
[15]. Tresserra F, Grases Pj, Fábrregas R, Fernández-Cid A, Dexeus S. Invasive micropapillary carcinoma. Distinct features of a poorly recognized variant of breast carcinoma. Eur J Gynaecol Oncol 1999;20:205–8.
[16]. Tsumagari K, Sakamoto G, Akiyama F, Kasumi F. The clinicopathological study of invasive micropapillary carcinoma of the breast. Jpn J Breast Cancer 2001;16:341–8 [in Japanese with English abstract].
[17]. Luna-Moré S, Gonzalez B, Acedo C, Rodrigo I, Luna C. Invasive micropapillary carcinoma of the breast. A new special type of invasive mammary carcinoma. Pathol Res Pract 1994;190:668–74.