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Case report

Case report: Transformation of juvenile fibroadenoma to borderline phyllodes tumor in young lady

Widyanti Soewoto [a,*], Ida Bagus Budhi [a,1], Ambar Mudigdo [b,2]

[a] Department of Surgery, Faculty of Medicine, Sebelas Maret University, Indonesia
[b] Department of Anatomical Pathology, Faculty of Medicine, Sebelas Maret University, Indonesia

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ABSTRACT

Introduction: Fibroadenoma is the most common benign tumor found in young women. Transformation for Fibroadenoma to borderline phyllodes tumor is rare. Phyllodes tumor tends to recur locally due to the aggressive nature of the phyllodes tumor tissue, which tends to become malignant when recurrence occurs.
Presentation of case: We report an 18-year-old woman with a lump in the right breast for one year, a mass in the upper lateral quadrant measuring 20x15x10cm; the lump felt mobile, supple, cystic. 2 years earlier, lumpectomy surgery with anatomical pathology of fibroadenoma mammae with 6 cm. A biopsy was performed, the result was a borderline phyllodes tumor. Neoadjuvant chemotherapy was performed with tumor reduction >50%, followed by wide excision surgery with tumor-free margins. The first one-year evaluation showed no signs of recurrence, and no signs of distant metastases were found.
Conclusion: Our patient had a juvenile relapse FA which progressively changed to borderline tumor phyllodes borderline. We report this case to the need for continuous follow-up for fibroadenoma cases and the possibility of recurrence and becoming malignant.

1. Introduction

Fibroadenoma (FA) is a benign biphasic tumor consisting of epithelium proliferation of the mammary glands and fibrous tissue. Around 13–20% of cases are often found in multiple forms, with no complaints at all with varying sizes. There are three types of FA, juvenile, cellular, and giant type. Juvenile FA is the rarest type of FA found in 0.5% - 4% of all FA cases, usually unilateral, and occurs at the age of 10–18 years with a fast-growing lump that possibly reaches a size of more than 10 cm [1,2].

Multiple FA transformations to phyllodes tumors are rare, although several centers have reported such cases. Phyllodes tumor, previously known as cystosarcoma, is a rare case consisting of around 0.3–0.9% of breast abnormalities. There are three types of phyllodes tumor; benign, borderline, and malignant types. Identifying the phyllodes tumor types is not an easy task. A large tumor characterizes clinical presentation of phyllodes tumor, can be up to >30 cm, mobile, with rubbery consistency and some cystic part. The tumor overgrows in a matter of weeks, even though the type is benign. Phyllodes tumor tends to recur locally due to the aggressive nature of the phyllodes tumor tissue. It tends to become malignant when recurrence occurs. The incidence of phyllodes tumor is relatively small, only 0.3–0.9% of all breast disorders. At Dr. Moewardi Hospital itself, there were only 18 cases of phyllodes tumor over the period from 2015 to 2016 [2,3].

We report a case at the general hospital Dr. Moewardi Hospital Surakarta Indonesia according to the SCARE criteria [4], a 16-year-old woman with juvenile FA with a size of 6 cm, had a lumpectomy with average breast tissue incision margins. One year after lumpectomy, there was a fast-growing lump for six months with a size >20 cm, and we did neoadjuvant chemotherapy and wide excision with breast preservation. And the patient has been permitted to publish his case.

One year after lumpectomy, there was a lump that overgrew for six months with a size of >20 cm. We delivered neoadjuvant chemotherapy and performed wide excision while preserving the breast. The patient has permitted to publish this case.

* Corresponding author at: Jalan Slamet Riyadi 419, Makamhaji, Kartasura, Sukoharjo, Jawa Tengah 57161, Indonesia.
E-mail address: widyanti_s@staff.uns.ac.id (W. Soewoto).
[1] Letter: Bagian Bedah RS Dr Moewardi Surakarta, Jalan Kol. Sutarto 132, Jebres Surakarta, Jawa Tengah 57126, Indonesia.
[2] Letter: Bagian Patologi Anatomi RS Dr Moewardi Surakarta, Jalan Kol. Sutarto 132, Jebres Surakarta, Jawa Tengah 57126, Indonesia.

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2. Presentation of case

An 18-year-old woman who came to the Department of Surgical Oncology of Dr. Moewardi General Hospital complained of a lump in the right upper lateral quadrant of the breast, which was getting more prominent with a size of 20 × 15 × 10 cm since one year back. The mass was felt to be mobile, supple, cystic. The results of breast ultrasound examination showed a massive tumor with most of the cystic components. There were no signs of distant metastases. The patient had no family history of cancer, and no other comorbid diseases were found.

In the previous two years, the patient lumped the breast with a diameter of 6 cm, and a lumpectomy was performed; with the results of anatomical pathology of mass size 6 × 4 × 3 cm, stromal overgrowth, and stromal atypia were not found, mitosis was not obtained. The edge of the incision in the form of normal breast tissue was concluded as Juvenile Fibroadenoma mammae. Postoperatively, patients are advised to have regular check-ups every year by the treating oncology surgeon. The patient did not control and only came to the doctor who treated the first two years after the lump grew.

The patient is a young unmarried woman, decided for a biopsy. The microscopic picture showed *borderline phyllodes tumor* where stroma cellularity was moderate, stroma overgrowth was mild, mitoses were 6/10 HPF, and tumor invasion was at the margins.

Considering the community's age and culture, neoadjuvant chemotherapy was performed to "downsize" the tumor. Chemotherapy regimen for sarcoma, epirubicin (60 mg/m^2 intravenously given on the first day) and ifosfamide (5000 mg/m^2 intravenously given over 24 h on the first day) was given three cycles 21 days apart for each cycle. There was no anemia or neutropenia chemotherapy during chemotherapy, and the patient only complained of pain throughout the body and weakness for one week after chemotherapy.

Post chemotherapy, the tumor was assessed, clinically showing a partial response with tumor size shrinking to 7 cm (>50%). Considering the condition of being in a state of the Covid-19 pandemic, the patient was not subjected to post-chemotherapy ultrasound examination. A quadrantectomy was performed and preserved the mammary areola. Pathology results were the same as preoperatively, namely moderate stromal cellularity and atypia, moderate stromal overgrowth, 6/10HPF mitoses, and tumor-free incision margins. Post-surgery continued with chemotherapy with the same regimen for three cycles.

Evaluation 1 year postoperatively, clinically the patient was in Karnosky 100 condition, there were no signs of recurrence. From breast ultrasound results, no residual mass was found in the right breast, and no signs of distant metastases were found (Fig. 1).

3. Discussion

In 1838, Johannes Muller gave the name of phyllodes tumor or cystosarcoma phyllodes to non-epithelial breast tumors. The term cystosarcoma phyllodes have been overlooked since 35–64% of phyllodes tumors are benign, so the use of this term is not entirely appropriate (Fig. 2).

The etiology of phyllodes tumor is certainly understood. This disease is usually found in adult women, 33–55 years. Histopathologically, phyllodes tumor consists of a stromal component limited by epithelium that forms a leaf-like appearance. WHO classifies the disease into three types: benign, borderline, and malignant, based on tumor margins, mitotic features, cellular stroma, atypia, and stromal growth. Azzopardi and Salvadori divided the phyllodes tumor classification based on the tumor margins, cellular stroma, mitotic count, and the presence of pleomorphism [4,5] (Table 1).

FA has been known to be a benign hyperplastic lesion and is not as neoplastic as other tumors. Transformation of FA into phyllodes tumor is rare; however, recurrent FA that overgrows can transform into phyllodes tumor and often occurs in the pre-menopausal age. In this case, it is a juvenile FA case where the patient is 16 with an initial tumor size of 6 cm, which has had a lumpectomy done by taking the tumor intoto, and the edge of the incision is normal breast tissue. Within one year (at the age of 17 years old), recurrence occurred in the same breast, then the patient got herself checked, and the tumor size was three times larger than the previous size [6] (Table 2).

The difficulty in making a diagnosis to determine the type of phyllodes clinically makes biopsy necessary to do. Histopathologically, phyllodes tumor consists of stromal component limited by epithelium that forms a leaf-like appearance. WHO classifies into three types: benign, borderline, and malignant based on tumor margins, mitotic features, cellular stroma, atypia, and stromal growth. Azzopardi and Salvadori divided the classification based on the tumor margins, cellular stroma, mitotic count, and the presence of pleomorphism.

Azzopardi et al. and Salvadori also divided phyllodes tumor into three types based on tumor margins, stromal cellularity, mitotic rate, and the presence of pleomorphism [4].

Phyllodes tumor originates from mesenchymal tissue so that if it is malignant, it will behave like other types of sarcoma. 10–20% of *malignant phyllodes tumors* will metastasize hematogenously. The most commonly affected organs are the lungs, bones, and liver. Given the high rate of local recurrence in phyllodes tumors, borderline phyllodes tumors are treated as malignant by surgery followed by radiotherapy [7,9].

At the same time, there is still some debate about chemotherapy for phyllodes tumors. Recommended surgery types depend on the size of cancer. It can be breast-conserving surgery in the form of lumpectomy,

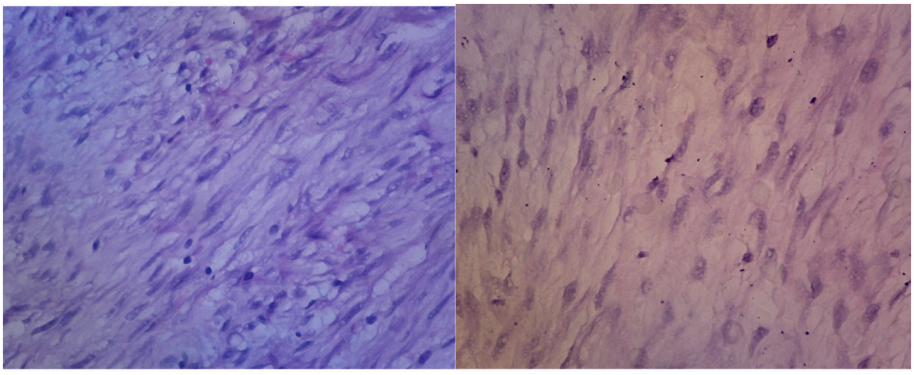
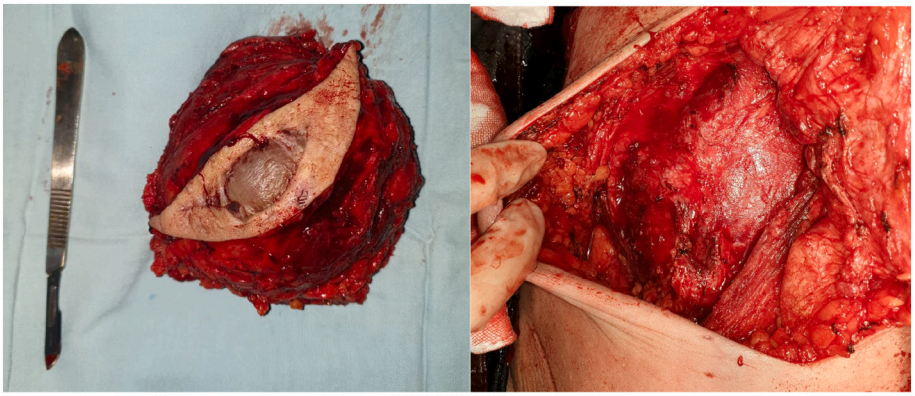


Fig. 1. A. Microscopic appearance of *fibroadenoma mammae* (400×), dominated by spindle cells. B. Microscopic appearance of *phyllodes tumor borderline type* (400×), with sizeable nucleated spindle cells.



A B

Fig. 2. A. Macroscopic tissue after extensive excision, tumor size ± & cm. B. The tumor is still limited to the fascia, and there is no infiltration to both *m. pectoralis major* and *m. pectoralis minor*.

Table 1
Histopathology criteria for phyllodes tumor according to WHO.

Criteria	Histological type		
	Benign	Borderline	Malignant
Stromal cellularity and atypia	Minimal	Moderate	Marked
Stromal overgrowth	Minimal	Moderate	Marked
Mitoses/10 high power fields	0–4	5–9	≥10
Tumor margins	Well circumscribed with pushing tumor margins	Zone of microscopic invasion around tumor margins	Infiltrative tumor margin

Table 2
Histopathology criteria for phyllodes tumor according to Azzopardi and Salvadori.

Criteria	Histological type		
	Benign	Borderline	Malignant
Tumor margins	Pushing	Moderate	Infiltrative
Stroma cellularity	Low	Moderate	High
Mitoses/10 high power fields	<5	5–9	≥10
Pleomorphism	Mild	Moderate	Severe

wide excision in the form of mastectomy. Some cases require reconstruction to repair the defect due to tumor size. The goal of surgery on phyllodes tumor is to achieve tumor-free margins to prevent local recurrence [4,7,9].

In this case, considering the condition of the patient who is not married and considering the socio-cultural considerations of the community, if a mastectomy is carried out, it will be more challenging to get married, it is preferable to do wide excision by maintaining the nipple-areola, considering the location of the tumor in the upper lateral quadrant and the patient is still 18 years old It's just that for large tumors, 20 cm diameter surgery is performed after administration of neoadjuvant chemotherapy with a regimen using epirubicin and ifosfamide epirubicin (60 mg/m^2 intravenously given on the first day) and ifosfamide (5000 mg/m^2 intravenously given within 24 h on the first day), first given three cycles with an interval of 21 days for each cycle.

Chemotherapy for borderline or malignant phyllodes tumors is still under debate. Some studies implied that chemotherapy is less effective for phyllodes tumors because it will not change the survival rate [10]. Chemotherapy using epirubicin and ifosfamide, which are regimens for sarcoma, for malignant phyllodes tumor that already metastasized extensively gave good results, distant metastases in some cases could be eliminated. Likewise, for this case, administration of neoadjuvant chemotherapy provided a "downsize" to >50% of the initial tumor size [8,10].

Radiotherapy is the next treatment modality after surgery in cases of malignant and borderline phyllodes tumor to prevent recurrence of cancer, especially in large phyllodes tumor, near or not tumor-free resection margins, and also for phyllodes tumor with histopathological features like hypercellular stroma, high nuclear pleomorphism, high mitotic rate, necrosis, and hypervascularization. Whereas for our case, we did not perform radiotherapy considering the tumor-free resection margin with borderline type, although in this case, we need to conduct strict follow-up.

4. Conclusion

Our case report is a rare case of a 16-year-old woman with Juvenile FA who had a progressive relapse over one year with the pathology turning into borderline phyllodes tumor. By looking at age and type of pathology, neoadjuvant chemotherapy was given with tumor reduction > 50%. Wide excision was performed, considering the patient was young and the result of the surgery was tumor-free margins.

Ethical approval

The authors have a statement regarding ethnic consent for publication of this case report.

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None.

CRediT authorship contribution statement

Widyanti Soewoto: study concept, data analysis and writing the paper
Ida Bagus Budhi: study concept and data analysis
Ambar Mudigdo: interpretation of anatomical pathology.

Declaration of competing interest

The authors state there is no competing interest in this case report.

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References

[1] S. Paepke, S. Metz, A.B. Salvago, R. Ohlinger, Benign breast tumor – diagnosis and management, Breast Care. 13 (2018) 403–412, https://doi.org/10.1159/000495919.
[2] I.C. Huang, P.C. Pei-Chen Li, D.C. Ding, Recurrent juvenile fibroadenoma of the breast in an adolescent. A case report, Medicine J. 97 (2018), https://doi.org/10.1097/MD.0000000000010765.
[3] IRJO. 68060 M.R. Widyaningrum, W. Soewoto, I.B.B.S. Adyana, Overall survival rate and recurrence free survival rate in breast sarcoma patients: single center 5-years retrospective study, Int. Res. J. Oncol. 4 3 (2021) 30–39.
[4] for the SCARE Group, T. Franchi, C. Sohrabi, G. Mathew, R.A. Agha, The SCARE 2020 guideline: updating consensus Surgical CAse REport (SCARE) guidelines, Int. J. Surg. 84 (2020) 226–230.
[5] January B.Y. Tan, G. Acs, S.K. Apple, S. Badve, I.J. Bleiweiss, E. Brogi, et al., Phyllodes tumours of the breast: a consensus review, Histopathology. 68 (1) (2016) 5–21, https://doi.org/10.1111/his.12876.
[6] Updated: Jul 23 D.R. Lannin, A.K. Konstantakos, J.H. Raaf, Phyllodes Tumor (Cystosarcoma Phyllodes), 2019, www.emedicine.medscape.com.
[7] A.K. Kolia, V. Kalles, C.G. Zografos, A. Chamzin, N.V. Michalopoulos, Case Report Giant phyllodes tumor occupying the whole breast in a young female: feasibility of mastectomy and immediate reconstruction, J. Surg. Case Rep. 4 (2020) 1–3, https://doi.org/10.1093/jscr/rjz410.
[8] J. Mitus, M. Reinfuss, J.W. Mitus, J. Jakubowicz, P. Blecharz, W.M. Wysocki, P. Skotnicki, Malignant phyllodes tumor of the breast: treatment and prognosis, Breast J. 20 (Breast J.) (2014), https://doi.org/10.1111/tbj.12333.
[9] R.A. Amir, R.S. Rabah, S.S. Sheikh, Case report malignant phyllodes tumor of the breast with metastasis to the pancreas: a case report and review of literature, Case Rep. Oncol. Med. 6491675 (2018) 5, https://doi.org/10.1155/2018/6491675.
[10] R.J. Barth, Borderline and malignant phyllodes tumors: how often do they locally recur and is there anything we can do about it? Ann. Surg. Oncol. 26 (2019) 1973–1975, https://doi.org/10.1245/s10434-019-07278-y.