

PSEUDOANGIOMATOUS STROMAL HYPERPLASIA (PASH) OF THE BREAST IN AN ADOLESCENT: A CASE REPORT AND LITERATURE REVIEW

ADOLESAN KIZ ÇOCUĞUNDA PSÖDOANJİYOMATÖZ STROMAL HİPERPLAZİ: OLGU SUNUMU VE LİTERATÜR DERLEMESİ

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ABSTRACT

Pseudoangiomas stromal hyperplasia (PASH) is a benign proliferative lesion of the breast stroma characterized by slit-like pseudovascular spaces lined by endothelial-like spindle cells. It is frequently found as incidental microscopic foci in the female breast and in gynecomastia of the male breast, but it rarely presents as a clinical problem. We report a case of bilateral extreme breast enlargement caused by PASH in an adolescent girl who was treated with subcutaneous mastectomy and reconstruction with breast implants following a recurrence after treatment with free nipple graft breast reduction.

Keywords: Pseudoangiomas stromal hyperplasia; mammoplasty; breast implants.

ÖZET

Psödoanjyomatöz stromal hiperplazi (PASH) meme bağ dokusunun benign proliferatif lezyonlarından birisidir. Endotel benzeri içi hücrelerle döşeli yarık benzeri psödoasküler alanlarla karakterizedir. Meme eksizyonu ve jinekomasti piyeslerinde sıklıkla insidental olarak görülse de nadiren klinik bir sorun olarak karşımıza çıkmaktadır. Bu olgu sunumunda PASH nedeniyle aşırı derecede bilateral meme büyümesi ile kliniğimize başvuran adolesan bir kız çocuğunun klinik seyri ve tedavisi bildirilmektedir. Bu hastaya, serbest meme grefti kullanılarak meme küçültme ameliyatı yapıldıktan sonra gelişen nüks nedeniyle subkutan mastektomi yapılmış ve meme implantı yerleştirilmiştir.

Anahtar Kelimeler: Psödoanjyomatöz stromal hiperplazi; mamoplasti; meme İmplantları.

INTRODUCTION

Pseudoangiomas stromal hyperplasia (PASH) is a benign proliferative lesion of the breast stroma which was first described by Vuitch et al in 1986 (1). It is characterized by slit-like pseudovascular spaces lined by endothelial-like spindle cells. The term “pseudoangiomas” describes the histological pattern which resembles an angiomas proliferation. It is believed to originate from mammary myofibroblasts and, for that reason, Leon et al. proposed the term nodular myofibroblastic hyperplasia of the mammary stroma to denote its true histogenesis (2).

It is frequently found as incidental microscopic foci in the female breast and in gynecomastia of the male breast (3-4), but it rarely presents as a clinical problem. Although some case series regarding PASH are published previously, literature on PASH consists primarily of case reports (5-7). PASH has two primary clinical presentations- either distinct nodular growth or diffuse enlargement of the breast.

We report a case of bilateral extreme breast enlargement caused by PASH in an adolescent girl who was treated with subcutaneous mastectomy and reconstruction with breast implants following a recurrence after treatment with free nipple graft breast reduction.

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CASE

A 13 years old girl presented with a 12 month history of extreme bilateral breast enlargement which started with menarche (Fig. 1).



Figure 1: Preoperative photographs of the patient. Her nipple to midclavicle distance was measured as 43 cm on the right side, and 50 cm on the left side.

She was referred to our clinic from the department of pediatrics with a preliminary diagnosis of virginal breast hypertrophy. At the time of presentation, her nipple to midclavicle distance was measured as 43 cm on the right side, and 50 cm on the left side. Breast enlargement was diffuse and homogenous with an absence of any solitary tumours. Multiple cutaneous ulcerations were present on both of her breast. Both breasts were extremely edematous and many dilated venous vessels were visible. There were no lymphadenopathies present.

Hormone levels were found to be normal. Her past medical history was unremarkable. She did not have a family history of breast disease. She was not on any medication and she recently started menarche. Her breast ultrasonography revealed ectatic retroareolar ductal structures and an expanded fibroglandular breast paranchime.

The patient underwent bilateral breast amputation with a free nipple areolar graft using a Wise pattern resection. Breast projection was preserved using a bipediced dermoglandular flaps (8). Total weight of the resected tissue was approximately 9000 g (Fig. 2). Histologic examination of the resected breast tissue revealed that breast enlargement was caused by the diffuse form of PASH. Immunohistochemical study of the specimen revealed positive immunoreactivity for CD34 and negative immunoreactivity for CD31.



Figure 2: A 4 x 5 cm large skin flap necrosis at the midline on right breast during the early postoperative course which was treated by excision and primary repair

There was a 4 x 5 cm large skin flap necrosis at the midline on the patient's right breast during the early

postoperative course, which was treated by debridement and primary repair. No other problems were reported until the end of first year, when the parents noticed a homogenous growth of both breasts. The available treatment options were discussed with the patient and her parents and a subcutaneous mastectomy and immediate reconstruction with anatomic implants was performed. The 600 ml implants were placed under the pectoral muscle on both sides. The patient was followed-up for 30 months after the second operation. There were no problems related to skin flaps, and the nipple areolar complex which was previously transferred as a graft was viable, although both breasts have markedly lost their projections (Fig. 3). Due to changes in patients stature in the years following reconstruction with implants, the patient is scheduled for a replacement of implants with larger implants.



Figure 3: Patients photographs in the third postoperative year. Nipple areolar complex which was previously transferred as a graft was viable, although both breasts have markedly lost their projections.

DISCUSSION

Rapid breast enlargement shortly after the beginning of puberty is termed as juvenile gigantomastia (9). Extreme cases requiring as far as 20 kg of breast tissue resection has been reported in the literature (10). Differential diagnosis of juvenile gigantomastia includes fibroadenomas, cystosarcoma phylloides, gravid hypertrophy of the breast, breast hypertrophy secondary to endocrine disorders, pseudogigantomastia associated with obesity, and malignant tumors such as lymphomas and sarcomas (11). To our knowledge, PASH of the breast was not seen associated with juvenile gigantomastia previously.

Pseudoangiomatous stromal hyperplasia was first reported by Vuitch et al. in 1986 as a benign breast disease characterized by a dense, collagenous proliferation of mammary stroma, forming inter-anastomosing capillary-like spaces lined by slender spindle cells (1). Empty spaces bordered with myofibroblasts were observed within the lesions, instead of true vessels covered with endothelial cells. In a study of 200 consecutive breast specimens evaluated for the presence of PASH, Ibrahim et al. reported that these changes could be detected microscopically in 23% of all routine breast biopsy specimens (12).

One of the largest series from a single institution was reported by Bowman et al. in 2012, consisting of 24 cases with PASH lesions (13). The reported size of tumors in this series ranged from 0.3 cm to 7.0 cm. All women in the series were premenopausal or

perimenopausal at diagnosis except two cases. A hormonal basis for the development of PASH was suggested by the authors due to the positive staining of the specimens for hormonal receptors. Our case, however, is presented with a substantially different profile from the cases presented in this series, both in terms of age and size of the lesions. Due to extreme enlargement of the breasts and young age of the patient, we preferred to perform a breast reduction first, considering that it might be a safer and predictable alternative to bilateral subcutaneous mastectomy and reconstruction, which can be done at a later stage.

The exact etiology of PASH is debated but a hormonal component is suggested, based on observations that it appears most commonly in young premenopausal women or in elderly women receiving hormone-replacement therapy (12). Although this hypothesis is supported by the fact that similar histologic findings are seen in normal mammary stroma during the luteal phase of the menstrual cycle, the lesion is also seen in men and in women not taking hormone therapy.(14) Interestingly, some studies reported that only a small percentage of PASH cases are found to be positive for estrogen receptors or for progesterone receptors (15-16) Preoperative diagnosis with fine needle aspiration or core needle biopsies may be misleading due to the low cellularity of lesions. PASH has to be differentiated from a low-grade angiosarcoma, benign myofibroblastoma and mammary hamartoma. In the case of PASH, there are no blood cells in the slit-like spaces, and the nuclei of the spindle cells in the lesions are attenuated, lack atypia and do not exhibit mitotic activity. Immunohistochemical studies of the specimens may show positive immunoreactivity for CD34 and negative immunoreactivity for CD31 and desmin. Microscopically, PASH is composed of an almost normal duct and lobular structure, and an increased amount of fibrous stroma. A complex pattern of anastomosing empty spaces in the dense collagenous stroma is also seen.

Medical and surgical treatment options have been proposed with varying success. Some authors have recommended local excision.(17) Nevertheless, PASH may recur after an excision. Powel et al. reported a case in which a bilateral mastectomy was performed for recurrences. A case report by Pruthi et al. describes relief from symptomatic, biopsy-proven PASH with the administration of tamoxifen, with persistence of the lesion and subsequent recurrence of breast pain and engorgement upon discontinuation of the drug caused by adverse effects.(16) Resuming administration of the antagonist was, however, followed again by improvement of symptoms. This may be an indirect additional support of the hypothesis regarding the hormonal etiology of PASH.

There have been no cases in which PASH undergoes malignant transformation. The prognosis for patients with PASH is good, and there have been no reports of distant metastasis or death related to PASH. In a study of 9065 biopsies by Degnim et al., PASH was identified in 579 (6.4%) cases (18). Breast cancers occurred in 34 women with PASH (5.9%) and 789 without (8.8%). The

study concluded that women with PASH do not have an increased future risk of breast cancer. Ferreira et al. suggested that PASH tumors diagnosed by biopsy but not subsequently excised remained stable and therefore, offering the option of close clinical surveillance instead of surgery may be a viable strategy.(19)

As our case has demonstrated, an extreme bilateral breast enlargement should raise clinical suspicion of PASH along with other more common conditions. The risk of recurrence should be noted. In cases where a diffuse enlargement of the breast is present, a two stage approach with subcutaneous mastectomy following a free nipple graft breast reduction can be safely performed.

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