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Endometriosis With Regenerative Skeletal Muscle Cells In The Abdominal Wall After Cesarean Section: A Case Report

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ABSTRACT
Endometriosis in the abdominal wall following a caesarean section is an uncommon occurrence, accounting for only 0.03%- 1.5%. Diagnosis is often late, so symptoms become more severe or the mass size increases. Delayed diagnosis increases morbidity, complications, and the complexity of treatment to reduce symptoms and remove the endometriosis mass. We report a 33-year-old female patient with a mass in the anterior abdominal wall that appeared over the past two months. The patient experienced mass enlargement and cyclic pain which began three days before menstruation. The patient had a history of one cesarean section and did not use contraception. Ultrasonography examination showed a mixechoic image of the anterior abdominal wall of the cesarean section scar measuring 2.48 x 2.45 x 1.38 cm. We performed a wide excision up to 1 cm outside the mass. Pathological anatomy showed endometrial glands and stroma between skeletal muscle tissue that were consistent with external endometriosis with regenerative skeletal muscle cells. Understanding the histology and immunohistochemistry of muscle cell regeneration, as well as basic clinical examination, is very helpful in establishing a diagnosis so that appropriate management can be carried out.

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INTRODUCTION

Endometriosis is a condition in which there are endometrial glands and stroma outside the uterine cavity, a chronic inflammatory condition that causes pain and infertility in 10-15% of women of reproductive age [1] The incidence is almost 6 times higher in developed countries compared to developing countries, because if the diagnosis is obtained at an early stage, the prognosis is better. Endometriosis occurs in about 6-10% of women worldwide. In Canada and the United States, the incidence of endometriosis ranges from 5-15% in women of reproductive age and 2-5% in postmenopausal women. Most patients with endometriosis are asymptomatic, and only 6-10% suffer from pelvic pain [2]. The pathogenesis of endometriosis is with ectopic implantation of endometrial cells during menstruation, which occurs retrogradely through the fallopian tubes into the pelvic cavity. The exact etiology of endometriosis is still unknown [3].

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The most common sites of endometriosis are the ovaries, broad ligaments, fallopian tubes, and pelvic organs. Extra pelvic endometriosis is very rare, especially on the anterior abdominal wall, although predisposing factors such as previous cesarean section cannot be excluded. Endometriosis in the abdominal wall following a cesarean section is an uncommon occurrence, accounting for only 0.03%-1.5%.[4] Patients with endometriosis of the abdominal wall usually present with a painful mass suspected to be a hernia or neoplasm. Most patients have a history of cesarean section and sometimes have a history of endometriosis in other organs or body locations. Endometriotic masses are benign tumors but can undergo malignant transformation. Endometriosis of striated muscle is sometimes associated with tissue damage and subsequent regeneration [4].

The gold standard for the diagnosis of endometriosis is diagnostic laparoscopy, supported by histological confirmation. There are also some supporting examination data that can help, such as ultrasonography and MRI, for the diagnosis of superficial endometriosis or endometriosis that has experienced deep infiltration. Greater resolution of soft tissue, less operator dependence, and the ability to show sharper pelvic images are the advantages of MRI compared to ultrasonography in detecting and determining the characteristics of endometriosis, especially detection of pelvic organ adhesions, endometriosis in the intestine and ureter involvement which can then be considered before surgery [5]. It can be diagnosed by detecting the presence of degenerative glandular variations in the biopsy sample which are usually surrounded by fibroid or cystic tissue.

Chronic complications of endometriosis will cause infertility, with the main symptoms being menstrual pain (dysmenorrhea), pelvic pain, and dyspareunia. Other symptoms include dysuria or dyschezia. A conclusive diagnosis of endometriosis can only be made by investigating the microscopic structure of the lesion removed through surgery. Some of the main symptoms that should be considered by the doctor for the diagnosis of endometriosis include; dysuria, dyschezia, hematochezia, hematuria, dyspareunia, infertility, dysmenorrhea and also non-cyclical pelvic pain. Transvaginal ultrasound examination is not very reliable in detecting peritoneal endometriosis, but is a very useful technique for the diagnosis of ovarian endometrioma. While abdominal ultrasound examination is very useful for the diagnosis of musculoskeletal endometriosis. The severity of endometriosis is determined based on the size, depth, amount, and location of the endometriosis tissue which includes: stage one (minimal), stage two (mild), stage three (moderate), and stage four (severe) [5], [6].

CASE PRESENTATION

A 33-year-old woman came to the hospital with complaints of a mass in the anterior abdominal wall for the past two months. The patient experienced cyclic pain starting three days before menstruation. The patient had a history of one cesarean section and did not use contraception. The patient did not have complaints of pain during urination and defecation. Ultrasonography examination showed a mixechoic image of the anterior abdominal wall of the cesarean section scar measuring 2.48 x 2.45 x 1.38 cm (Fig. 1). The patient had no history of cancer and no significant weight loss. We suspected musculoskeletal endometriosis and planned to perform surgery.

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The operation began with an incision through the mass, and a wide excision was performed around the mass to 1 cm outside the mass. The excision was performed until it reached the base of the mass. We obtained a mass measuring 5 x 4 x 2.5 cm and then sent it to the pathology anatomy department (Fig. 2). The patient was hospitalized for three days and discharged in good condition. One week after surgery, the patient was followed up and had a well-healed surgical wound.

Pathological anatomy showed microscopically endometrial glands and stroma between skeletal muscle tissue (Fig. 3). There were also hemosiderophages and clusters of polygonal cells with abundant cytoplasm, with one to multiple nuclei resembling rhabdoid cells and multinucleated giant cells (Fig. 4). No. mitosis was identified. Immunohistochemical staining was not performed. The final diagnosis was endometriosis with regenerative skeletal muscle cells.

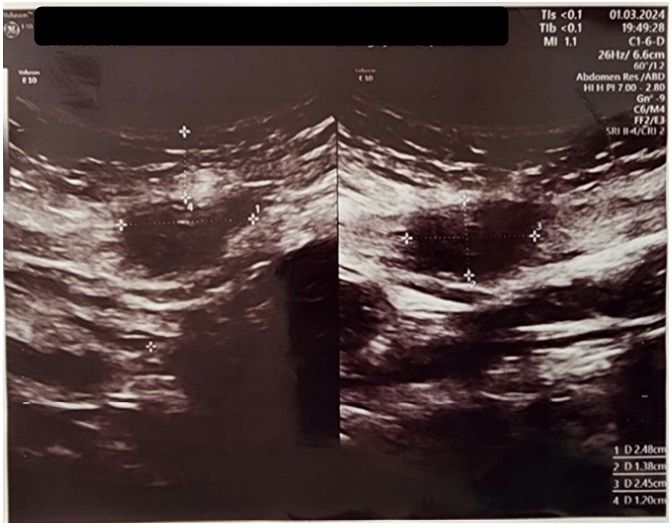

Figure 1. Abdominal ultrasound examination showed a mixechoic lesion and irregular edges in the anterior abdominal wall measuring 2.48 x 2.45 x 1.38 cm suggestive of an endometriosis scar

Figure 2. Postoperative wide excision of endometriosis

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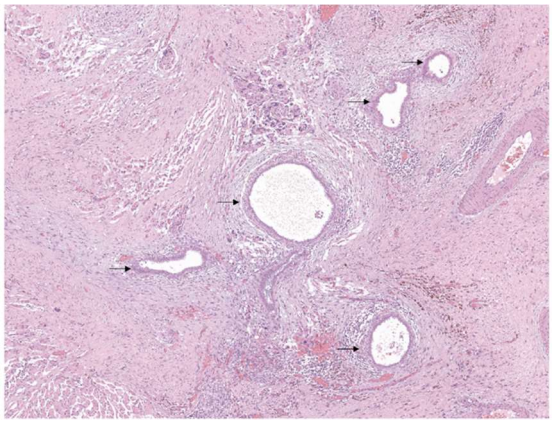

Figure 3. Endometrial glands (arrow) and stroma surrounded by cluster of polygonal cells.

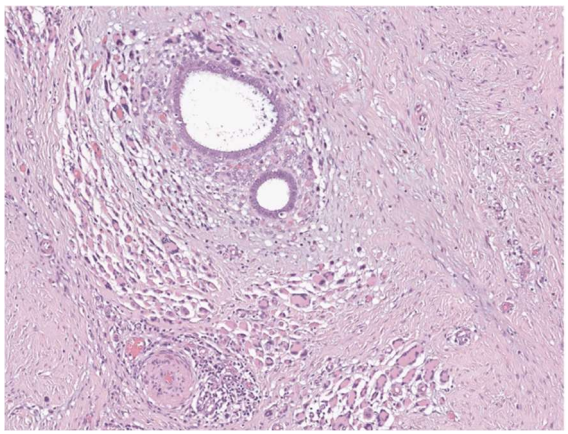

Figure 4. Polygonal cells with abundant cytoplasm, with one to multiple nuclei resembling rhabdoid cells and multinucleated giant cells.

DISCUSSION

Endometriosis is a pathological condition in which tissue similar to the endometrium, the inner lining of the uterus, grows outside its normal location [7]. Endometriosis in skeletal muscle is often associated with tissue damage and regeneration, especially in cases of previous surgery. Skeletal muscle can regenerate after trauma, namely, a series of cellular responses characterized by a degenerative phase and a regenerative phase [8]. Often the morphological features of the different phases appear together and clinically can appear as malignancy. There are several unexplained conditions of skeletal muscle regeneration and the hypothesis is that skeletal muscle regeneration is induced by endometriosis [9].

Muscle cells are stimulated by growth factors and other signals produced by the endometrioid focus cycle [10]. As a result, in some cases, the phenomenon of striated muscle regeneration is triggered by surgery and then maintained by the endometrial cycle present in the abdominal wall muscle tissue. Other studies have also reported that striated muscles close to ectopic endometriosis tissue show a regenerative process [11], [12].

Medical treatment for endometriosis is designed based on the severity of symptoms, especially pain, and the impact on the patient's quality of life [13]. Medical therapies generally

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aim to reduce painful symptoms, slow the progression of the disease, and improve the function of the affected organs. One of the most common approaches is hormonal therapy, which involves the use of combined oral contraceptives or steroid hormones such as progestins. These combinations work by suppressing ovulation, reducing estrogen levels, and inducing a temporary menopause-like condition, thereby inhibiting the proliferation of endometriosis tissue. Studies by Taylor [12] and Ye [14] show that hormonal therapy can significantly reduce pain and inflammation associated with endometriosis, although it does not eliminate the lesions completely.

Hormonal therapy for endometriosis, including the implementation of a six-month procedure to suppress ovarian function, is expected to significantly reduce pain from endometriosis. GnRH agonists create a temporary state of hypogonadism by suppressing ovarian function and lowering estrogen levels [15]. This protocol, usually carried out for six months, has been shown to be effective in reducing pain from endometriosis. However, side effects such as loss of bone density and menopausal symptoms, including hot flashes and sleep disturbances, often limit its use. Therefore, it is often combined with adjunctive therapies, such as administration of low-dose estrogen to mitigate such side effects.

If hormonal therapy is ineffective, surgical intervention may be an alternative for the treatment of endometriosis [16]. Laparoscopy, as the gold standard for diagnosis and treatment, allows direct visualization and removal of endometriosis lesions. This technique provides the benefits of faster recovery compared to laparotomy, as well as better postoperative pain reduction. In cases of extra-pelvic endometriosis, such as those involving musculoskeletal tissues in the abdominal wall, wide excision is required to remove all ectopic tissues and prevent recurrence [9], [14].

However, surgery is not completely risk-free. Factors such as possible postoperative adhesions and recurrence of endometriosis require careful consideration. Therefore, a combination approach that integrates post-surgical hormonal therapy is often used to reduce the risk of recurrence. In addition, comprehensive pain management that includes the use of analgesics, psychological support and physical therapy can help improve the patient's quality of life.

CONCLUSION

Understanding the histology and immunohistochemistry of muscle cell regeneration is important. Endometriosis with regenerative muscle cells is a rare case. Because of its rarity and confusing immunohistochemistry, the diagnosis can be unclear. Clinical examination is very helpful in establishing the diagnosis so that appropriate management can be carried out.

REFERENCE

[1] M. P. Andres, F. V. L. Arcoverde, C. C. C. Souza, L. F. C. Fernandes, M. S. Abrão, and R. M. Kho, “Extra-Pelvic Endometriosis: A Systematic Review,” *J. Minim. Invasive Gynecol.*, vol. S1553-4650, no. 19, pp. 31256–7, 2019, doi: 10.1016/j.jmig.2019.10.004.

[2] Y. Moradi *et al.*, “A systematic review on the prevalence of endometriosis in women,” *Indian J. Med. Res.*, vol. 154, no. 3, p. 446, 2021, doi: 10.4103/ijmr.IJMR_817_18.

[3] C. Meuleman *et al.*, "Surgical treatment of deeply infiltrating endometriosis with colorectal involvement," *Hum. Reprod. Update*, vol. 17, no. 3, pp. 311–326, May 2011, doi: 10.1093/humupd/dmq057.

[4] R. Mirza, J. Abdulsattar, and J. Cotelingam, "Endometriosis Associated Striated Muscle Changes: Simulating Tumor," *Case Rep. Pathol.*, vol. 2021, pp. 1–4, Feb. 2021, doi: 10.1155/2021/6666283.

[5] B. R. Mason, D. Chatterjee, C. O. Menias, P. H. Thaker, C. L. Siegel, and M. Yano, "Encyclopedia of endometriosis: a pictorial rad-path review," *Abdom. Radiol.*, vol. 45, no. 6, pp. 1587–1607, Jun. 2020, doi: 10.1007/s00261-019-02381-w.

[6] E. Saffarieh and S. R. Y. Sharami, "A review on the management of endometriosis induced pain endometriosis," *Pakistan J. Med. Heal. Sci.*, vol. 13, no. 4, pp. 1057–1064, 2019.

[7] M. Arafah, S. Rashid, and M. Akhtar, "Endometriosis: A Comprehensive Review," *Adv. Anat. Pathol.*, vol. 28, no. 1, pp. 30–43, Jan. 2021, doi: 10.1097/PAP.0000000000000288.

[8] A. Musarò, "The Basis of Muscle Regeneration," *Adv. Biol.*, vol. 2014, pp. 1–16, Jul. 2014, doi: 10.1155/2014/612471.

[9] R. Colella, M. G. Mameli, G. Bellezza, R. Del Sordo, A. Cavaliere, and A. Sidoni, "Endometriosis-associated Skeletal Muscle Regeneration: A Hitherto Undescribed Entity and a Potential Diagnostic Pitfall," *Am. J. Surg. Pathol.*, vol. 34, no. 1, pp. 10–17, Jan. 2010, doi: 10.1097/PAS.0b013e3181c12491.

[10] M. Massimiani, V. Lacconi, F. La Civita, C. Ticconi, R. Rago, and L. Campagnolo, "Molecular Signaling Regulating Endometrium–Blastocyst Crosstalk," *Int. J. Mol. Sci.*, vol. 21, no. 1, p. 23, Dec. 2019, doi: 10.3390/ijms21010023.

[11] P. Vercellini, P. Viganò, E. Somigliana, and L. Fedele, "Endometriosis: pathogenesis and treatment," *Nat. Rev. Endocrinol.*, vol. 10, no. 5, pp. 261–275, May 2014, doi: 10.1038/nrendo.2013.255.

[12] H. S. Taylor, A. M. Kotlyar, and V. A. Flores, "Endometriosis is a chronic systemic disease: clinical challenges and novel innovations," *Lancet*, vol. 397, no. 10276, pp. 839–852, Feb. 2021, doi: 10.1016/S0140-6736(21)00389-5.

[13] X. Gao, Y.-C. Yeh, J. Outley, J. Simon, M. Botteman, and J. Spalding, "Health-related quality of life burden of women with endometriosis: a literature review," *Curr. Med. Res. Opin.*, vol. 22, no. 9, pp. 1787–1797, Sep. 2006, doi: 10.1185/030079906X121084.

[14] H. Ye, C. Shen, Q. Quan, M. Xi, and L. Li, "Endometriosis of the skeletal muscular system (ESMS): a systematic review," *BMC Womens. Health*, vol. 23, no. 1, p. 37, Jan. 2023, doi: 10.1186/s12905-023-02184-8.

[15] N. Magon, "Gonadotropin releasing hormone agonists: Expanding vistas," *Indian J. Endocrinol. Metab.*, vol. 15, no. 4, p. 261, 2011, doi: 10.4103/2230-8210.85575.

[16] N. Berlanda, E. Somigliana, M. P. Frattaruolo, L. Buggio, D. Dridi, and P. Vercellini, "Surgery versus hormonal therapy for deep endometriosis: is it a choice of the physician?," *Eur. J. Obstet. Gynecol. Reprod. Biol.*, vol. 209, pp. 67–71, Feb. 2017, doi: 10.1016/j.ejogrb.2016.07.513.