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Histological features in abdominal wall endometriosis**Fatmagul KSKU Cabuk¹, Fatma Aktepe², Elvin KSKU³, Ipek Coban¹, Gulen Bulbul Dogusoy²**¹*Istanbul Bilim University of Science, Department of Pathology, Istanbul, Turkey*²*Gayrettepe Florence Nightingale Hospital, Pathology Laboratory, Istanbul, Turkey*³*Akşehir State Hospital, Istanbul, Turkey*

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Abstract

Endometriosis is localization of endometrial tissue out of endometrium and myometrium. Location on peritoneum and scar tissue associated with abdominal incision called as abdominal wall endometriosis (AWE). Abdominal wall endometriosis is a rare lesion affection under 1% of effected patients. However, due to increase in laparoscopy, hysterectomy and cesarean section procedurs, the AWE cases are increasing. In this study we aim to analyse AWE rates and evaluate their histologic properties. Endometriosis cases between 2010-2015 were included in study. These cases were evaluated according to localization and out of these 23 cases were revealed as AWE, and in 15 of 23 cases histologic specimens can reach. 317 cases with endometriosis were revealed and 23 (7.2%) were identified as AWE. The mean age was 35±5 (29-45). In 11 (47.8%) cases AWE was developed on scar tissue which have a history of cesarean section procedurs in a mean 3.4 year before. In 10 (66%) cases tubal (ciliary) metaplasia, in 3 (20%) cases hobnail metaplasia and in one case (7%) atypia and mitosis were observed as glandular changes. In 11 (73%) cases myxoid changes, 3 (20%) signet ring-like cells-like changes, 2 (13%) atypical myocytes with giant cells, in one (7%) case thick walled vessels resemble spiral arteries of endometrium and in one case (7%) decidual changes were observed as stromal changes. In this study we highlight the high prevalence of AWE compare to literature. Besides, the wide spectrum of stromal and glandular metaplastic changes could be challenging in proper diagnosis. AWE should keep in mind in the differential diagnosis of lesions in this localization.

Keywords: Abdominal wall endometriosis, endometriosis, metaplasia**Introduction**

Endometriosis is defined as the location of the endometrial tissue outside the endometrium and myometrium [1,2]. This disease is seen in at least 10% of reproductive age women. [3]. The most common site of localization is the ovary, uterine ligament and peritoneum [4]. When it is located in the peritoneum (as well as in the skin, subcutaneous tissue, abdominal and pelvic wall muscles) and in the abdominal surgery scars, it is called “abdominal wall endometriosis (AWE)” [3]. Abdominal wall endometriosis is a very rare condition and seen in 1% of affected patients. [5]. While the most common sites of AWE are cesarean and abdominal hysterectomy scars, it can also develop on laparoscopic trocar route, amniocentesis with fine needle pathway and Bartholin gland excision areas [6]. Implantation of the endometrial tissue into the incision site during gynecological or obstetric surgery usually leads to extrapelvic endometriosis [7,8]. Generally, endometriosis on scar tissue can develop in months or years after primary surgery

[9]. Clinical diagnosis may be difficult, however, due to its rare and inconsistent appearance [10]. This rare form of endometriosis can be misdiagnosed as hernias, hematomas, lipomas, dermoids, abscesses, keloids, hypertrophic scars [3,7]. Histological examination also reveals that various metaplastic variants in the glandular and stromal epithelium in could be challenging to diagnose AWE [2,11].

In recent years, as in the entire world, laparoscopy, hysterectomy and cesarean operations have been increasing in our country that leads to an increase in the endometriosis developing on the scar surface. Due to metaplastic and stromal changes histologically, it can be confused with other diseases, so it is important to diagnose AWE. Our aim of this study is to determine the proportion of AWE cases that have increased in recent years and to reveal their histological features.

Material and Method

A total of 317 cases of endometriosis diagnosed between 2010 and 2015. These were retrospectively analyzed and classified according to their localizations and 23 cases with AWE were included in the

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study. The age of these patients, the localization of endometriosis, and the operation history were examined. Hematoxylin-eosin (HE) stained preparations of 15 of these patients were available and were examined according to their histological characteristics.

Changes in glandular component and stromal component were examined as histological features. The changes in the glandular component are reactive atypia, metaplasia (tubal, hobnail, squamous), pregnancy or progestin-associated Arias-Stella reaction, hyperplasia (typical, atypical), clear and oxyphilic cell change. And the changes in the stromal component are atrophy, inflammatory cells typically involved histiocytes, pregnancy or progestin related changes (Signet ring cell and decidual changes), myxoid changes, smooth muscle metaplasia, absence of glandular component (stromal endometriosis), elastosis. [1,2,11]. In addition, necrotic pseudoxanthomatous nodule formation, blood vessel and lymphatic invasion, Liesegang ring type calcification were also investigated.

Results

Of the 317 cases diagnosed with endometriosis, 284 (89.5%) were found in ovary and 33 were detected in extraovarian areas. 23 of the 33 cases of extraovarian cases were found in places that, is suitable for AWE localization. Among all endometriosis patients, AWE was found in 7.2%. In the AWE cases, the age ranged from 29 to 45 years (mean 35 ± 5). Twelve (52.1%) of the cases developed in the scar tissue, four of them were within the rectus muscle, two were under the skin, and six were subcutaneously localized in the fat tissue. There was a cesarean section in the patients before the diagnosis of endometriosis 4 years ago. The other 11 cases were located in the inguinal region, two in the umbilicus, and seven in the abdominal wall. Frozen section was done in three AWE cases and all diagnosed as benign lesions.

In the histopathological examination of 15 patients whose preparations could be reached, strands of single layered columnar cells were selected to extend to the lumen in the glands; tubal (ciliated) metaplasia (figure 1), was observed as glandular changes in 10 cases. The epithelial cells extending towards the lumen like a nail; hobnail metaplasia was detected in three cases (figure 2). Reactive atypia and mitosis were detected in one case. Atypical mitosis was not observed. In one case, normal endometrial epithelium was observed in glands and no metaplastic changes were observed.

When examined in terms of stromal characteristics, myxoid changes seen in 11 cases, atypical myocytes with hyperchromatic and pleomorphic nuclei accompanied by giant cells in 2 (figure 3), and signet ring-like cell changes in were seen 3 cases (figure 4). Narrow, luminal, thick-walled vessels consisting of several layers resembling spiral arteries in the endometrium as vascular changes was seen in one case (figure 5). In some cases, more than one stromal feature was seen together. Histologically, stroma consisting of cells with small round nucleus decidual features with large eosinophilic cytoplasm in only one case was noted (figure-6). In this case, diffuse strong nuclear positivity was detected with ER (estrogen: Bond RTU - ER (6F11) PA0151 mouse Mab IgG G1) and PR (progesterone: Bond RTU - PR (16) PA0312 - mouse MAb IgG G1).

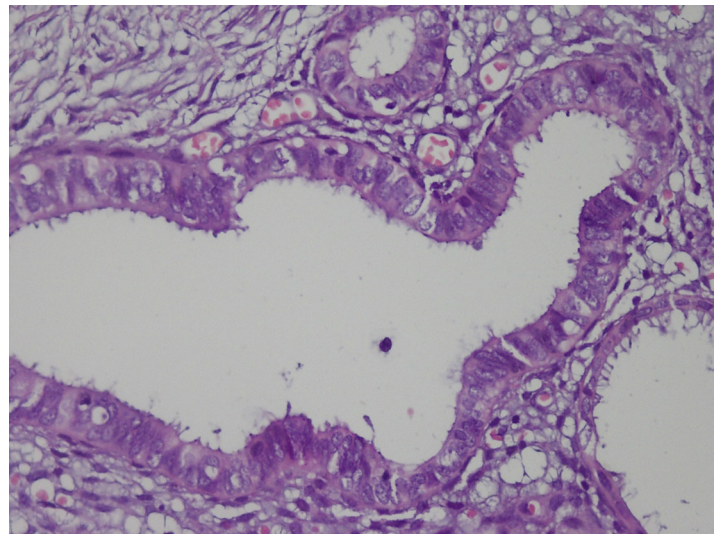


Figure 1. Tubal metaplasia are seen in the glands (x400)

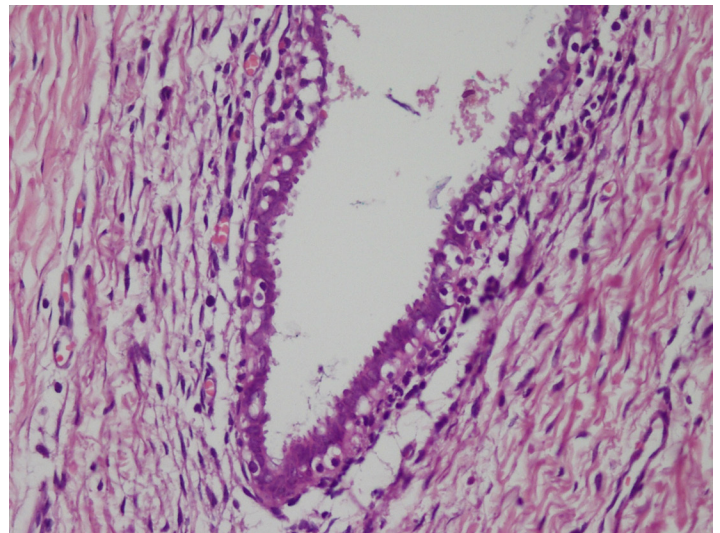


Figure 2. Hobnail metaplasia are seen in the glands (x400)

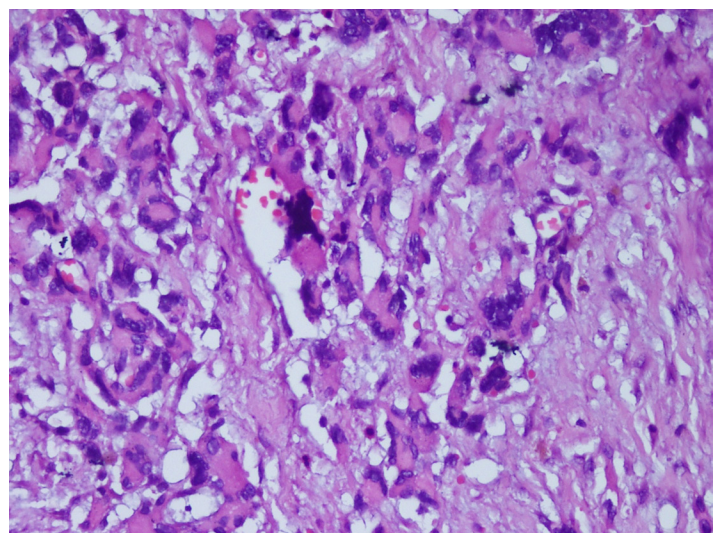


Figure 3. Changes accompanied by reactive myocytes accompanied and giant cells in the myxoid stroma (x400)

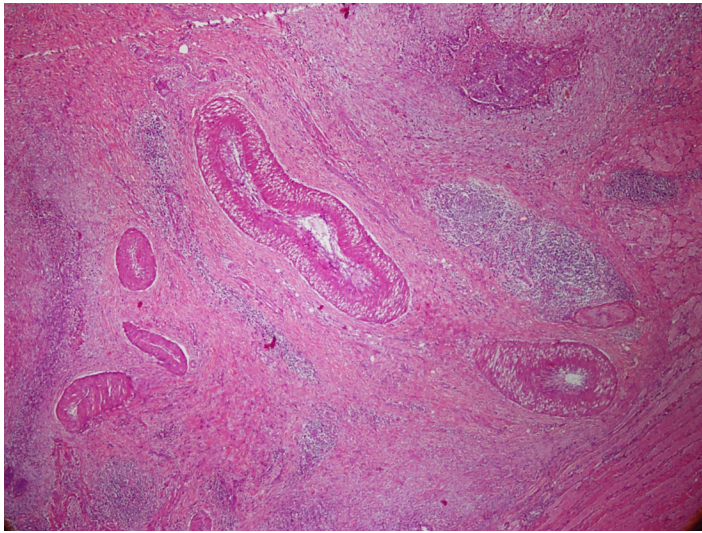


Figure 4. Areas with thick-walled veins (HEEx200)

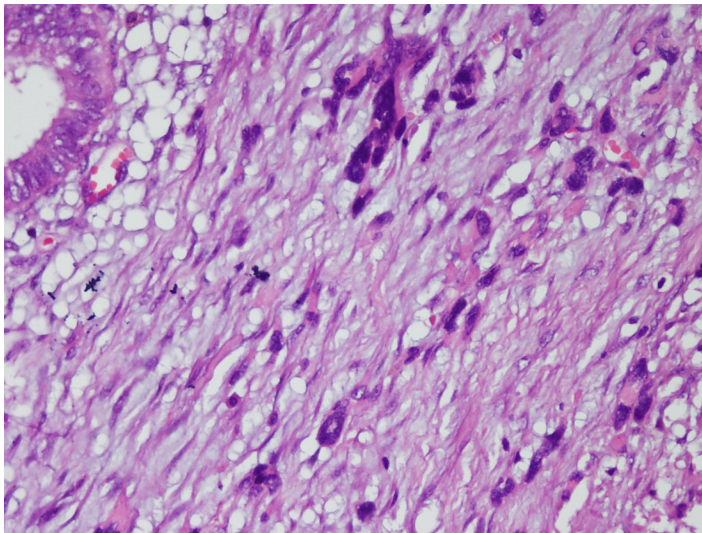


Figure 5. Signet ring like cell-like changes (HEEx400)

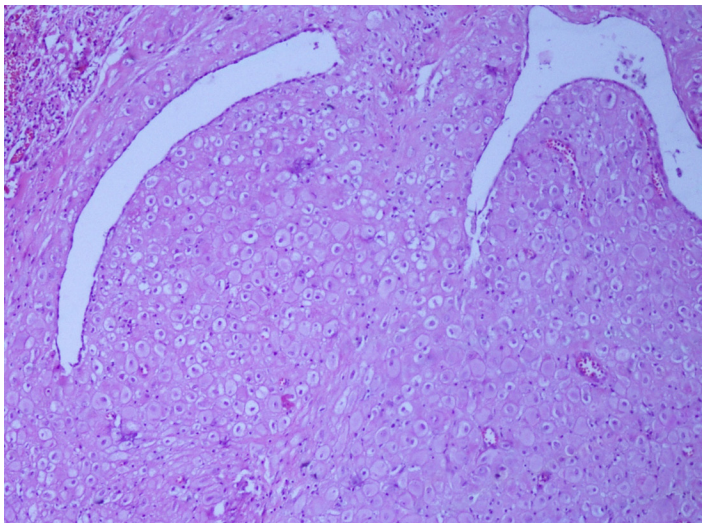


Figure 6. Areas with decidual changes (HEEx200)

Table 1. Baseline characteristics of the study participants

Histopathologic features	n % (n=15)
Glandular component	
-Tubal metaplasia	10 (%66)
-Hobnail metaplasia	3 (%20)
-Reactive atypia, mitoses	1 (%7)
Stromal component:	
-Myxoid changes	11 (%73)
-Signet ring-like cell changes	3 (%20)
-Atypical myocytes accompanied by giant cells	2 (%13)
-Thick-walled veins	1 (%7)
-Decidual changes	1 (%7)

Discussion

In the literature, the rate of development of AWE was reported between 1% to 5.5% in different studies [5,7], but this rate was found to be 7.2% in our study. Mean age was 35 ± 5 years in our study. Similarly, Aytaç et al. also reported the endometriosis developed on the scar surface with a mean age 32 ± 6 [9]. The mean duration of development of AWE after the first surgical operation was 3.4 years. In the literature, the rate of AWE development after cesarean section is 3.2 years, but there is also a case report that it develops after 5 years [2,10].

In recent years there has been an increase in KDE due to the increased number of cesarean deliveries [3]. There are many theories about the pathogenesis of cutaneous endometriosis, including metaplasia, venous / lymphatic metastasis and iatrogenic implantation of endometrial tissue [2,10]. This mechanical transplantation in the incision area or microscopic seeding is thought to be the most likely cause of cutaneous endometriosis after surgery [7,8]. However, laparoscopic procedures, appendectomy, and hernia repair can result in scar endometriosis after surgery and seeding theory does not fully explain the pathogenesis [9]. In our study, we found AWE in a patient who had never undergone surgical or interventional procedures from the wall of the abdomen in 11 cases. For this reason, we think that all AWE phenomena cannot be explained by the theory of seeding.

While very rare cases of AWE were referred to skeletal muscle involvement, 4 of our cases were located within the striated muscle [11].

Cases with AWE tend to show metaplastic changes in the Müllerian epithelium [11]. For this reason, changes in the glandular and stromal areas were investigated in cases with AWE. Tubal metaplasia (66%) is the most common metaplasia in the glands in our study. This is similar to the rates in the study of Kazakov et al. (61%) [11]. Hobnail metaplasia was also observed in the glands. This was indicated as 10% in the study of Kazakov et al. [11], but it is 20% in our study. In our cases, there are reactive atypia and mitosis in the glandular epithelium. In the literature, although could be very rare, Miller et al. report that malignancies such as endometrioid carcinoma and clear cell carcinoma may develop in endometriosis foci [12]. Rare changes that can be rarely seen in the glandular component such as mucinous, oxyphilic, squamous and papillary syncytial components, have not been observed in our cases [1,11].

In our study, the most frequent changes in stroma were myxoid changes (73%). In the study of Kazakov et al., this rate is 69% [11]. When myxoid changes are common, they can interfere with metastatic adenocarcinomas, especially in frozen sections [2]. Although signet ring like cell changes were reported in the literature in a small number of cases [11], in our study, it was seen in 3 cases. Signet ring-like changes are usually caused by the multivacuolar shape of fat cells in the myxoid stroma [11]. Sometimes decidual cells may look like stony ring cells, but immunohistochemically, unlike carcinoma metastases, they are pancytokeratin-negative [2]. Decidual changes in AWE are also rare in the literature and are frequently reported as case reports [11,13-15]. Decidual changes in our study were seen in 1 case. When it is diffuse, it needs to be separated from the malignancy [16]. For this reason, additional immunohistochemical staining may be required [2]. In our case, the entire stroma around the sparse gland structures consisted of diffuse decidual cells. Therefore, additional immunohistochemical studies were needed. The diagnosis could be confirmed by detecting nuclear positive ER and PR markers in decidual cells. Decidual changes usually occur in the presence of pregnancy [14, 16]. However, such changes have been reported in patients who have not had previous pregnancy stories [15]. In our case, there was a cesarean story 3 years ago.

In our study, atypical myocytes accompanied by multinuclear giant cells were observed in 2 cases secondary due to degenerative changes. This appearance is more common in skeletal muscle involvement and leads to sarcomatoid-like changes in the stroma. However, in differential diagnosis from sarcoma, these degenerative changes are limited only in the vicinity of the glands and are not widely distributed [11]. In 1 case, thick-wall veins were observed in the stroma similar to the spiral arteries in the endometrium.

Secondary changes such as focal ossification, calcification, elastosis, micronodular stromal endometriosis have been reported in stroma [11]. However, we did not find such changes in the stroma.

The rate of malignancy in extrapelvic endometriosis is about 1% [17]. With the increase in the number of cases of AWE in recent years, it is necessary to keep in mind the histological changes in these cases in terms of the differentiation from malignancies [15-17].

Conclusion

In conclusion, our study examined histopathological changes, including atypical features in AWE. Abdominal wall endometriosis lesions have a broad spectrum of metaplastic changes, including glandular and stromal components. Many differentiations can be observed Müllerian epithelium, including malignancy. Therefore, endometriosis should also keep in mind in the differential diagnosis of lesions, especially localized on the abdominal wall.

Competing interests

The authors declare that they have no competing interest.

Financial Disclosure

The financial support for this study was provided by the investigators themselves.

Ethical approval

Ethical approval was obtained from the hospital administration to use the patients' data.

References

1. Clement PB, Young RH. Two previously unemphasized features of endometriosis: micronodular stromal endometriosis and endometriosis with stromal elastosis. *Int J Surg Pathol.* 2000;8(3):223-7.
2. Kurman, Robert J., Hedrick Ellenson, Lora, Ronnett, Brigitte M. Blaustein's Pathology of the Female Genital Tract. In: Diseases of the Peritoneum. 6th edition. Springer US. 2011;625-678.
3. Khan Z, Zanfagnin V, El-Nashar SA, et al. Risk factors, clinical presentation, and outcomes for abdominal wall endometriosis. *J Minim Invasive Gynecol.* 2017;24(3):478-84.
4. Malebranche AD, Bush K. Umbilical endometriosis: A rare diagnosis in plastic and reconstructive surgery. *Can J Plast Surg.* 2010;18(4):147-8.
5. Marsden NJ, Wilson-Jones N. Scar endometriosis: a rare skin lesion presenting to the plastic surgeon. *J Plast Reconstr Aesthet Surg.* 2013;66(4):111-3.
6. Gidwaney R, Badler RL, Yam BL, et al. Endometriosis of abdominal and pelvic wall scars: multimodality imaging findings, pathologic correlation, and radiologic mimics. *Radiographics.* 2012;32(7):2031-43.
7. Fernández Vozmediano JM, Armario Hita JC, Cuevas Santos J. Cutaneous endometriosis. *Int J Dermatol.* 2010;49(12):1410-2.
8. Nominato NS, Prates LF, Lauar I, et al. Caesarean section greatly increases risk of scar endometriosis. *Eur J Obstet Gynecol Reprod Biol.* 2010;152(1):83-5.
9. Aytac HO, Aytac PC, Parlakgumus HA. Scar endometriosis is a gynecological complication that general surgeons have to deal with. *Clin Exp Obstet Gynecol.* 2015;42(3):292-4.
10. Din AH, Verjee LS, Griffiths MA. Cutaneous endometriosis: a plastic surgery perspective. *J Plast Reconstr Aesthet Surg.* 2013;66(1):129-30.
11. Kazakov DV, Ondic O, Zamecnik M, et al. Morphological variations of scar-related and spontaneous endometriosis of the skin and superficial soft tissue: a study of 71 cases with emphasis on atypical features and types of müllerian differentiations. *J Am Acad Dermatol.* 2007;57(1):134-46.
12. Miller DM, Schouls JJ, Ehlen TG. Clear cell carcinoma arising in extragonadal endometriosis in a caesarean section scar during pregnancy. *Gynecol Oncol.* 1998;70(1):127-30.
13. Ding DC, Hsu S. Scar endometriosis at the site of cesarean section. *Taiwan J Obstet Gynecol.* 2006;45(3):247-9.
14. Val-Bernal JF, Val D, Gómez-Aguado F, et al. Garijo. Hypodermal decidualized endometrioma with aberrant cytokeratin expression. A lesion mimicking malignancy. *Am J Dermatopathol.* 2011;33(5): 58-62.
15. DeClerck BK, Post MD, Wisell JA. Cutaneous decidualized endometriosis in a nonpregnant female: a potential pseudomalignancy. *Am J Dermatopathol.* 2012;34(5):541-3.
16. Nogales FF, Martin F, Linares J, et al. Myxoid change in decidualized scar endometriosis mimicking malignancy. *J Cutan Pathol.* 1993;20:87-91.
17. Stern RC, Dash R, Bentley RC, et al. Malignancy in endometriosis: frequency and comparison of ovarian and extraovarian types. *Int J Gynecol Pathol.* 2001;20(2):133-9.