Management of Abdominal Wall Endometriosis: A Report of Five Cases and Literature Review

Abdominal Duvar Endometriyoz Yönetimi ve Literatürün Gözden Geçirilmesi

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ABSTRACT We report five cases of the unusual gynaecological condition of abdominal wall endometriosis and its diagnosis and treatment. The patients with abdominal wall endometriosis admitted to our outpatient clinic between January 2007 and July 2009 were included in this study. The informed consents of all the patients were obtained and the study was approved by the Human Research Review Committee. Five cases of abdominal wall endometriosis were demonstrated by ultrasound, doppler ultrasound and magnetic resonance imaging (MRI). The treatment of choice for abdominal wall endometriosis is wide-margin excision. Histopathological examination of the excised masses confirmed the diagnosis of scar endometriosis. Abdominal wall endometriosis can be associated with surgical scars or occur spontaneously. The majority of cases have been reported after obstetrical or gynecological procedures. The aetiology is thought to be transplantation of viable endometrial cells into the procedural wound. The patients usually complain of pain and an enlarging subcutaneous nodule. Imaging, in conjunction with the clinical history and examination, has an important role in the diagnosis of abdominal wall endometriosis. MRI is very likely to be more specific than CT in the diagnosis.

Key Words: Abdominal wall; pain; endometriosis; diagnosis; cesarean section

ÖZET Çalışmamız, ender rastlanılan bir jinekolojik durum olan abdominal duvar endometriyoz tanısı almış beş olgu üzerinden, abdominal duvar endometriyoz tanısı ve tedavisi üzerinedir. Ocak 2007-Haziran 2009 tarihleri arasında bu tanı ile başvuran hastalar çalışmaya dâhil edilmiştir. Hastalara çalışma hakkında bilgilendirme yapılmış, etik kurul tarafından onay alınmıştır. Abdominal duvar endometriyoz tanısının konulmasında ultrasonografi, Doppler ultrasonografi ve manyetik rezonans görüntüleme (MRG) yöntemleri kullanılmıştır. Tedavi için geniş çapta eksizyon tercih edilmiştir. Histopatolojik değerlendirmede eksize edilen kitlenin tanısı endometriyoz olarak konfirme edilmiştir. Abdominal duvar endometriyoz cerrahi skar dokuları ile ilişkili olabileceği gibi, spontan olarak da gelişebilmektedir. Literatürde bildirilmiş olguların çoğu obstetrik veya jinekolojik işlemlere sekonder gelişmiştir. Etiyoloji, canlı endometriyoz hücrelerinin uygulanan cerrahi işlem sırasında oluşan yaranın doku içine transplante olması şeklinde açıklanmaktadır. Hastalar genellikle ağrı ve büyüyen cilt altı kitle şikâyeti ile başvurmaktadır. Abdominal duvar endometriyoz tanısında klinik öykü ve muayene ile eşlik eden görüntüleme yöntemleri önemli yer tutmaktadır. MRG, bilgisayarlı tomografiye oranla tanıda daha spesifik bulgular sunmaktadır.

Anahtar Kelimeler: Abdominal duvar; ağrı; endometriyoz; tanı; sezaryen

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Endometriosis, a common disease, is defined as the presence of functional endometrial glands and stroma outside the uterine cavity. The ovaries, pouch of Douglas, and peritoneum covering the pelvic or-

gans are most commonly affected, followed by the bowel and urinary tract. Involvement of the abdominal wall and extra-pelvic sites (e.g. brain, lung, diaphragm) is uncommon.

Imaging, in conjunction with the clinical history and examination, has an important role in the diagnosis of abdominal wall endometriosis. This condition is often confused with other surgical conditions. Abdominal wall endometriomas present as a painful swelling resembling surgical lesions such as stitch granulomas, hernias, haematomas, abscesses and tumours.

There are only a few articles in the literature describing the imaging features of this clinical entity. Abdominal wall endometriosis often acts like an "iceberg" with most of the diseases under the surface. In this article we report five cases of this unusual gynaecological condition and its diagnosis and treatment.

MATERIAL AND METHODS

A retrospective study was made of five patients presenting with abdominal wall masses which proved to be endometriosis. We conducted a case series of five patients between January 2007 and July 2009 who presented with history of cesarean section, nodule inside of a surgical scar and chronic pelvic pain. The informed consents of all the patients were obtained and the study was approved by the Human Research Review Committee.

Clinical history, physical examination, abdominal ultrasound, doppler sonography and magnetic resonans imaging strongly suggested postoperative abdominal wall masses. The transabdominal sonography was performed by the Logiq 200 pro ultrasound machine with a 7.5-MHz convex probe. Our doppler ultrasound machine was Logiq 5 and the MR diagnosis was performed by the Logic. The age, parity, symptoms and duration, previous surgeries, interval between previous surgery and current operation, initial diagnosis, the sites and size of endometrioma were analyzed.

All patients agreed to undergo wide excision of the mass under general anaesthesia. In all cases the excised masses were confirmed as endometriosis by histopathological examination. Histopathological criteria of abdominal wall endometriosis were described as areas of typical endometrial glands with surrounding cellular stroma, bordered by vessels with occasional foci of haemosiderin-laden macrophages, the extravasation of erythrocytes in the stroma and some acute inflammatory infiltrates around the glands.

CASE REPORTS

FIRST CASE

A 36-year-old woman was examined in the surgical outpatient clinic. She suffered from a slowly enlarging umbilical nodule over a period of two years. There was a prior medical history of a caesarean section and a vaginal delivery. The time interval between the caesarean section and the detection of the nodule was about 6 years. She had no previous symptoms of pelvic endometriosis, such as dysmenorrhoea, dyspareunia or dyschezia. Examination revealed a 4 x 3 cm tender subcutaneous mass on the right side of the Pfannenstiel scar. The overlying skin was normal.

Ultrasound examination revealed a 3.8 x 3.3 x 2.8 cm well defined mass lying within the right rectus abdominis muscle. The mass had a heterogeneous appearance and a slightly higher attenuation than the surrounding muscle. MRI demonstrated a well defined mass lying within the rectus abdominis muscle. The mass contained areas of low signal on both T1- and T2-weighted sequences. On the T2-weighted sequence, some high signal foci were seen around the posterior aspect of the mass. The preliminary diagnosis was stitch granuloma. Under general anaesthesia the mass was completely excised. Histopathological examination revealed endometriosis. The postoperative period was uneventful.

SECOND CASE

A 34-year-old gravida 2, para 2, woman presented with a one year history of a painful sensation on her abdominal scar from a caesarean section carried out 5 years ago. A hard nodule around the caesarean scar had been noted in the last 6 months. She did not have any symptoms of endo-

metriosis. On physical examination some induration was detected around the scar and over the deep tissues.

Sonography also revealed a hypoechoic lesion, 4.1 x 3.3 x 3.2 cm in size underneath the skin layer. Doppler ultrasound defined predominant peripheral vascularity, with relatively little internal blood flow. The vessel architecture was simple. MRI confirmed the diameters of the mass. MRI findings were similar to that of the first patient. At this stage, the differential diagnosis was abdominal wall endometriosis and a granuloma. The patient was subsequently referred to a gynaecologist. Of clinical significance was a history of worsening pelvic pain with the onset of menstruation. The patient underwent wide excision of the mass under general anaesthesia. Histopathologic findings revealed scar tissue with endometrial gland infiltration, consistent with scar endometriosis. The postoperative recovery course was uneventful.

THIRD CASE

A multiparous woman, 38 years of age, presented with a slowly enlarging umbilical nodule over a period of 3 years. Her relevant past medical history consisted of three caesarean sections and a laparotomy due to ectopic pregnancy. There was no previous history of endometriosis. A bloody discharge was noted from the lesion and the patient reported intermittent pain over the past 8 months. On physical examination, she had a firm, well-defined nodule 4 cm in diameter. There was discolouration of the skin.

This patient underwent doppler ultrasound examination which revealed a well defined, oval shaped anechoic mass lying within the left rectus abdominis muscle, 4.4 x 3.7 x 4.7 cm in size. The mass appeared slightly more echogenic than the surrounding muscle. Doppler ultrasound findings were benign. An ultrasound-guided biopsy was performed and the histopathology revealed it to be a case of endometriosis. The endometriotic foci in the rectus abdominis muscle were surgically excised. Examination of the excised mass confirmed the diagnosis of scar endometriosis. The postoperative period was uneventful.

FOURTH CASE

A 25 year-old gravida 2, para 2, woman was examined in our gynaecology outpatient clinic. She presented with an enlarging, painful nodule on the scar of a caesarean section performed 2 years ago. The pain was reported to be cyclic and most severe just prior to menstruation. She had a significant prior medical history of one caesarean section. She had no previous symptoms of pelvic endometriosis, such as dysmenorrhoea, dyspareunia or dyschezia. On physical examination there was no induration or discolouration of the skin but a firm, well-defined nodule measuring 3 cm, was detected on her abdominal scar.

Ultrasound examination revealed a hypoechoic mass with internal echoes, 3.4 x 2.6 x 1.9 cm in size, within the left rectus abdominis muscle. Doppler ultrasound defined minimal peripheral vascularity. MRI confirmed the diameters of the nodule. The findings of MRI were similar to that of the first and second patients. The patient underwent wide excision of the nodule by a general surgeon. The histopathology revealed typical findings of endometriosis. The recovery period was uneventful.

FIFTH CASE

A multiparous woman, 28 years of age, presented with a six month history of a painful nodule on the abdominal scar from a caesarean section. The pain was non-cyclic. Some induration and discolouration of the skin was observed on her physical examination. She had been suffering from pelvic endometriosis symptoms such as dysmenorrhoea, however endometriosis had not been demostrated by laparoscopy. There was a prior medical history of four caesarean sections and a dilatation & curettage.

This patient underwent Doppler ultrasound examination. It revealed a well defined, oval shaped anechoic area 2.4 x 2.0 x 1.7 cm in size, lying within the rectus abdominis muscle. The simple branching vessel architecture was defined by doppler ultrasound. This painful nodule in the rectus abdominis muscle was surgically excised. Examination of the excised mass confirmed the diagnosis of scar endometriosis. The postoperative recovery course was uneventful.

DISCUSSION

Endometriosis is a poorly understood disease, defined as the presence of endometrium outside the uterus. Pelvic pain, which is the most common symptom of endometriosis, often correlates with the menstrual cycle, but sometimes patients with endometriosis may also complain of pain at other times during the monthly cycle. The other well known symptom associated with endometriosis is infertility. It is a common medical condition affecting an estimated 89 million women of reproductive age around the world. In asymptomatic women, the prevalence ranges from 2% to 22%, depending on the diagnostic criteria used and the populations studied. In women with dysmenorrhoea, the incidence of endometriosis ranges from 40% to 60%, and in women with subfertility it ranges from 20% to 30%.[1] The incidence peaks at about age forty.[1]

Several different hypotheses have been put forward as to the causes of endometriosis.[2] Unfortunately, none of these theories have ever been entirely proven, nor do they fully explain all the mechanisms associated with the development of the disease. Thus, the cause of endometriosis remains unknown.

Although generally confined to intrapelvic tissues, endometriosis has been reported in the pleura, skin, lung, diaphragm, brain and skeletal muscles of the extremities.[3] Endometriosis found within the skin or subcutaneous tissues of the abdominal wall, can be associated with surgical scars or occur spontaneously. In the medical literature, spontaneous abdominal wall endometriosis cases have been reported by Ideyi et al and Chiang et al.[4,5] Spontaneous abdominal wall endometriosis is thought to arise through metaplasia of urachus remnants or transport from endometrium via lymphatic and vascular channels.[6] The majority of endometriosis in the abdominal wall have been reported after obstetrical or gynecological procedures, in which there has been possible contact with endometrial tissue, such as caesarean delivery, hysterotomy, hysterectomy, ectopic pregnancy, laparoscopy, tubal ligation, oopherectomy, appendectomy and amniocentesis.[7] The aetiology of these foci of endometriosis is thought to be transplantation of viable endometrial cells into the procedural wound.[8] These endometrial cells benefit from the protective barrier and nutrition source provided by clot formation at an early stage of wound healing.[9] The time interval between various procedures and clinical presentation has been shown to vary from less than 3 months to 20 years in different series. Chatterjee et al reported the incidence of endometriosis located within surgical scars or tracts to be 1-2% after hysterotomy and 0.03-0.4% after caesarean section. They attributed the higher incidence of endometriosis after hysterectomy to the pleuripotential capabilities of the early decidua.[10] Also Wang et al found the highest incidence of scar endometriosis after mid-trimester termination of pregnancy.[11]

Patients with abdominal wall endometriosis usually complain of pain and an enlarging subcutaneous nodule. Pain can be either cyclic, which is strongest just prior to menstruation, or non-cyclic.[12] The tender nodule appears as a slowly growing and painful lump, usually settling near the surgical procedure scars. Discharge and bleeding from the painful nodule may occur during menstruation.[5] Physical examination reveals a firm, well-defined nodule and discolouration of the overlying skin. It is interesting to note that patients presenting with these symptoms are commonly referred to a general surgeon and some cases have been reported in the general surgical literature. Due to this non-specific presentation, preliminary diagnosis is often mistaken as stitch granuloma, abscess, hernia, haematomas, benign tumour (e.g. lipoma, haemangioma, desmoid tumour) and malignancy.[13]

On ultrasound, the lesion usually appears as a well-defined, hypoechoic mass with internal echoes (Figure 1).[14] Heterogeneity due to repeated haemorrhage may also be a feature. The closed abdominal wall tissue is usually involved in the lesion. Doppler ultrasound is an important part of the investigation as it may reliably differentiate benign from malignant soft-tissue masses. Simple branching vessel architecture with no evidence of vascular loops, trifurcations or stenoses, suggests a benign lesion.[15] Woodward et al. reported a chan-

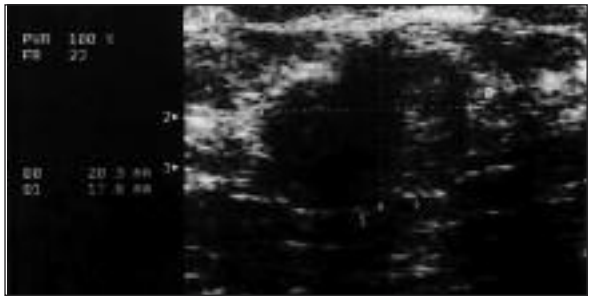

FIGURE 1: Ultrasonography (USG) revealed a nonspecific-hypoechoic mass with scattered internal echoes, within the left rectus abdominis muscle.

ge in the Doppler ultrasound appearance of abdominal wall endometriosis during the menstrual cycle.[16] Classical MRI findings consist of multiple cystic structures appearing hyperintense on T_1 weighted images (Figure 2). On T_2 weighted images, these structures have different signal intensity patterns.[17] MRI is very likely to be more specific than CT in the diagnosis of abdominal wall endometriomas because of its ability to detect haemosiderin.[18] Because of its high spatial resolution, MRI can be more useful when the endometriotic lesion is small. Moreover MRI is better than CT in differenciating endometrial tissue from surrounding structures.[18]

Diagnosis is commonly made by histopathology, using fine needle aspiration cytology (FNAC), core biopsy, US or CT guided biopsy.[7,17] Wide surgical excision provides both diagnosis and therapeutic intervention.[19] Histopathology describes areas of typical endometrial glands with surrounding cellular stroma, bordered by vessels with occasional foci of haemosiderin-laden macrophages, typical of endometriosis (Figure 3).[20]

The treatment of choice for abdominal wall endometriosis is wide-margin excision, which may sometimes require mesh placement.[12] Local recurrence after surgical excision is likely to be a result of inadequate excision or spread of endometriosis during manipulation.[11] Irrigation of the wound and the use of different gloves and stitches for closure of the abdominal wound following surgical excisions are very important in reducing recurrence of abdominal wall endometriosis.[9,21] In cases of recurrence, the possibility of malignancy should be kept in mind.[22]

Medical treatment with the use of progestogens, oral contraceptive pills, gonadotropin releasing hormone agonists and danazol is not effective and gives only partial relief in symptoms symptoms with no change in the lesion size.[23] However in the medical literature, postoperative adjuvant therapy, either with danazol or GnRH-agonist, is recommended.[9,24]

In the management of our patients, medical treatment was not combined with surgical excision. We excised the lesions widely and applied the surgical techniques mentioned above to minimize recurrence. The postoperative recovery of all our patients were uneventful.

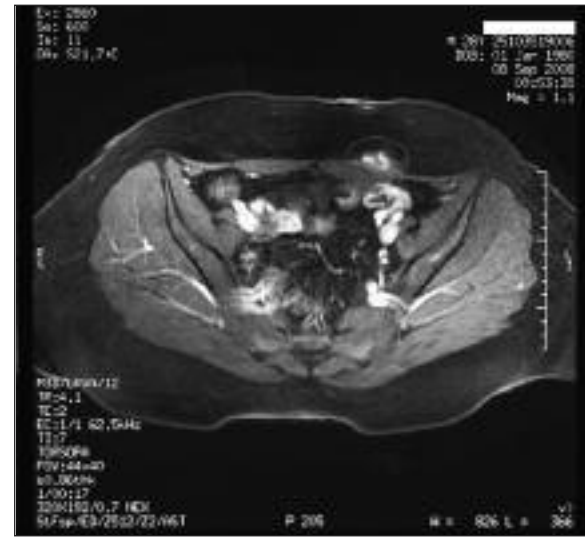

FIGURE 2: Axial T1-weighted image shows slightly high intensity of abdominal wall endometriosis lesions compared with muscle.

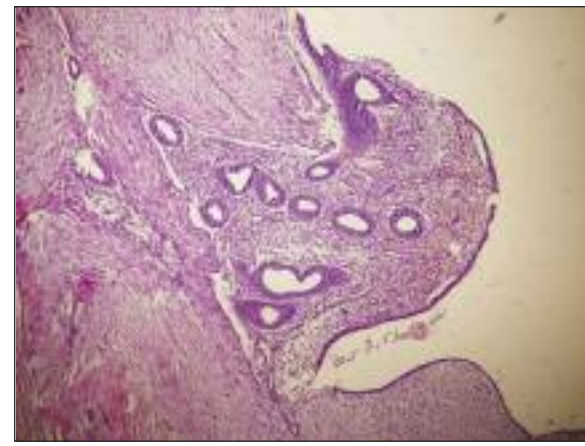

FIGURE 3: Histopathologic findings revealed scar tissue with endometrial glands, consistent with scar endometriosis (hematoxylin-eosin stain X100, mucosa to the right).

In patients with abdominal wall endometriosis, it is important to investigate pelvic endometriosis. Unfortunately there are only a few reports in the literature describing this further investigation. Simultaneous laparoscopy and hormone therapy for the diagnosis of coexisting pelvic endometriosis is only indicated in cases with continual recurrence and those accompanied by symptoms of pelvic endometriosis.[25]

In conclusion, although rare, endometriosis should be a part of the differential diagnosis in the work-up of a painful and enlarging mass in the abdominal wall of women of reproductive age, especially if there is a history of previous gynaecological or obstetrical surgery. Clinical history and examination have an important role to play in the diagnosis. The treatment of choice is wide-margin excision. All patients should be followed-up for recurrence.

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