Extrapelvic endometriosis in abdominal wall scar and PPAR gamma expression: A case report

Achmad Kemal Harzif\(^a,b\), Melisa Silvia\(c\), Ana Mariana\(c\), Lydia Olivia\(b\), Bara Tracy Lovita\(c\), Budi Wiweko\(a\)

\(a\) Division of Reproductive Endocrinology and Infertility, Department of Obstetric and Gynecology, Faculty of Medicine, Universitas Indonesia, Dr. Cipto Mangunkusumo General Hospital, Jakarta, Indonesia

\(b\) Department of Obstetric and Gynecology, Faculty of Medicine, Universitas Indonesia, Dr. Cipto Mangunkusumo General Hospital, Jakarta, Indonesia

\(c\) Indonesian Reproductive Medicine Research and Training Center (INA-REPMED) of Faculty of Medicine, Univesity of Indonesia, Ciptomangunkusumo Hospital Jakarta, Indonesia

**ABSTRACT**

Introduction: Endometriosis is a frequent gynecological disorder. Its findings on the abdominal wall are rare cases, usually reported with a history of former surgery. The activation of PPAR\(\gamma\) expression could be one of alternative non-hormonal treatment for endometriosis.

Presentation of case: A patient, 34 years old, suspected of endometriosis since 5 years ago because of pain during menstruation. Since the last 4 months, she had worsening of dysmenorrhea and palpable lumps during menses. She had previously performed cesarean section surgeries 3 times and a laparotomy cystectomy due to left endometriosis cyst. From ultrasound examination, on the abdominal wall (submusculus) there is a firmly defined hypoechoic mass, sized \(32 \times 10 \times 15\) mm, derived from the mass of endometriosis.

Discussion: The endometriosis findings on the abdominal wall are rare cases. Symptoms usually are cyclic pain which is also accompanied by a palpable lump. A meta-analysis of 16 studies concluded that sensory excitatory threshold and pain tolerance approached the lowest value shortly before and during menstruation. In humans, administration of PPAR\(\gamma\) agonists reduced pain symptoms. Counseling to patients is given about the possibility of recurrence.

Conclusion: PPAR expressivity assessment has not been used as a target for endometriosis therapy. Further studies separating epithelial tissue and stroma can be performed to prove the role of PPAR\(\gamma\) in the pathogenesis of endometriosis.

© 2018 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

1. Introduction

Endometriosis is a frequent gynecological disorder with an 8%–15% prevalence. The extrapelvic implantation of endometrial tissue is found in various organs and systems, the findings on the abdominal wall are rare cases, usually reported with a history of former surgery. A non-hormonal treatment that can be used for long period without significant side effects and with no impact on fertility is urgently needed for endometriosis patients. The activation of PPAR\(\gamma\) receptor expression could be one of alternative non-hormonal treatment for endometriosis. Recently, as inhibition of angiogenesis, PPAR-\(\gamma\) ligands in addition to their established role as tumor cell cycle modulators could be implicated in future strategies for cancer treatment.

This study’s introduction has been reported in line with the SCARE criteria [1].

2. Presentation of case

A patient, 34 years old, parity 3 came with painful abdominal pain during menstruation (VAS 6–8) which getting worst since 4 months before admission. Pain is felt during first day of period until the third day (since last 5 years). Palpable lump in the abdomen during pain. Previously had been taking drugs such as analgesic and progesterone synthetic but pain was not relieved. Her LMP was January 7\(^{\text{th}}\), 2017. Patients had done ultrasound and CT scan in RSUD Serang revealed an abdominal wall endometriosis (Figs. 1–3).

Patients had previously performed cesarean section 3 times and 1 laparotomy for indication of left endometriosis cyst. She got menarche at age 12 years, regularly with 30-day cycle, duration 4–5 days...
Fig. 1. Ultrasound examination results.

Fig. 2. Endometriosis lesions during excision procedure.
3. Discussion

Endometriosis is a frequent gynecological disorder [2]. The findings on the abdominal wall are rare cases, usually reported with a history of former surgery [2]. Symptoms usually are cyclic pain which is also accompanied by a palpable lump [2]. In patients suspected of endometriosis since 5 years ago due to pain during periods, since the last 4 months the pain felt heavy and palpable lumps that hardened during the pain.

The mechanism of the pain in endometriosis are direct and indirect effects on focal bleeding originating from endometriosis implants, the effects of proinflammatory cytokines present in the peritoneal cavity and irritation or direct infiltration of innervation in the pelvic cavity. A meta-analysis of 16 studies concluded that sensory excitatory threshold and pain tolerance approached the lowest value shortly before and during menstruation [3].

In endometriosis, serum Ca-125 levels may be elevated mildly [4]. However, it is not a specific marker because it also increases in other inflammatory conditions, but can be used as a marker to see a recurrence or response to therapy given [5–7].

Non-hormonal treatments such as NSAID do not interfere with fertility, but long-time treatment with such agents may pose significant side effects. A non-hormonal treatment that can be used for long period without significant side effects and with no impact on fertility is urgently needed for endometriosis patients who wish to conceive [8].

In this case we found that the abdominal wall endometriosis express PPARγ activity and its value is higher compared to eutopic endometrium. Activation of PPARγ reduces aromatase, thus reducing the production of estrogen in endometriosis lesions and reducing the proliferation of endometriosis lesions in vitro [9]. In humans, administration of PPARγ agonists reduced pain symptoms. It has been reported that increased PPARγ expression in peritoneal lesions reduced symptoms in endometriosis patients, especially pelvic pain, dysmenorrhea, and dyspareunia [10,11]. Expression of PPARγ receptor in endometriosis tissue may be useful to study its role in the pathogenesis of endometriosis and as a predictor in determining the response to therapy with PPARγ ligands [11]. Research is needed to evaluate different PPARγ expression in endometriosis case and compare to normal control.

Counseling to patients is given about the possibility of recurrence. Rarely occurs recurrence, if it occurs within the first year and possibly associated with inadequate excision [2,4].

4. Conclusion

Extrapelvic endometriosis is a rare case. In this case, endometriosis is obtained in the abdominal wall scar tissue. The findings revealed that there were no significant differences on PPARγ expression of endometrium between endometriosis and no endometriosis group. PPAR expression assessment has not been
used as a target for endometriosis therapy. Further studies separating epithelial tissue and stroma can be performed to prove the role of PPARγ in the pathogenesis of endometriosis.

**Conflicts of interest**

There is no conflict of interest in this study.

**Funding**

There is no such involvement sponsor in this study.

**Ethical approval**

This study was approved by the Ethics Committee of Faculty of Medicine, Universitas Indonesia, on October 2014 (reference number: 733/UN2.F1/ETIK/2014).

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Author contribution**

Achmad Kemal Harzif, MD, OG (REI) who has study concept, resources, validation and supervision.

Melisa Silvia, MD and Ana Mariana, MD who have data collection.

Lydia Olivia, MD, OG who has data analysis and writing paper.

Bara Tracy Lovita, MD who has editing and prepare the manuscript.

Budi Wiweko, MD, OG (REI) who has review manuscript and supervision.

**Registration of research studies**

Researchregistry4468.

---

**Guarantor**

Achmad Kemal Harzif, MD, OG (REI).

Provenance and peer review

Not commissioned externally peer reviewed.

**Appendix A. Supplementary data**

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.ijscr.2018.10.026.

**References**

[1] R.A. Agha, A.J. Fowler, A. Saetta, I. Barai, S. Rajmohan, D.P. Orgill, for The SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.

[2] J.D. Horton, K.J. Dezee, E.P. Ahnfildt, M. Wagner, Abdominal wall endometriosis: a surgeon’s perspective and review of 445 cases, Am. J. Surg. 196 (2) (2008) 207–212.

[3] M.A. Fritz, L. Speroff, Clinical Gynecology Endocrinology and Infertility Textbook, 8th ed., 2011, pp. 1221–1248, USA.

[4] S. Luisi, M. Gabbanini, S. Sollazzi, F. Calonaci, S. Razzi, F. Petragna, Surgical scar endometriosis after cesarean section: a case report, Gynecol. Endocrinol. 22 (5) (2006) 284–285.

[5] R.N. Taylor, D.I. Lebovic, Endometriosis, in: Yen and Jaffe’s Reproductive Endocrinology, 6th ed., W.B. Saunders, Philadelphia, 2009, pp. 691.

[6] B.R. Carr, et al., Endometriosis, in: J. Schorge, J. Schaffer, L. Halvorson (Eds.), Williams Gynecology, The McGraw-Hills Companies, New York, 2008, pp. 476–514.

[7] S.E. Bulun, Endometriosis, N. Engl. J. Med. 360 (3) (2009) 268–277.

[8] C. Kyama, A. Mihalyi, P. Simsa, Non-steroidal targets in the diagnosis and treatment of endometriosis, Curr. Med. Chem. 15 (10) (2008) 1006–1017.

[9] S. Kavoussi, J. Arosh, J. Lee, PPAR-gamma ligand activation decreases p450 aromatase gene expression in human endometriotic epithelial and stromal cells in vitro, Fertil. Steril. 92 (3) (2009) 12.

[10] B. McKinnon, N.A. Bersinger, A.W. Huber, A. Kuhn, M.D. Mueller, PPAR-[gamma] expression in peritoneal endometriotic lesions correlates with pain experienced by patients, Fertil. Steril. 93 (1) (2010) 293–296.

[11] M.B. Moravek, E.A. Ward, D.I. Lebovic, Thiazolidinediones as therapy for endometriosis: a case series, Gynecol. Obstet. Invest. 68 (3) (2009) 167–170.

---

**Open Access**

This article is published Open Access at scenedirect.com. It is distributed under the IJSCR Supplemental terms and conditions, which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.