

Pregnancy after Sclerotherapy and Embolization of Ovarian Varicose Veins in a Patient with Infertility and Deep Endometriosis

Kennedy Gonçalves Pacheco^{1*} and Raquel Fortes²

¹Vascular Surgeon and Phlebologist, Brazil

²Full Member of the Brazilian College of Radiology, Brazil

*Corresponding author: Kennedy Gonçalves Pacheco, Vascular Surgeon and Phlebologist, Brazil, Tel: 5521 998118965; E-mail: kennedy-gp@uol.com.br

Received date: Dec 02, 2014; Accepted date: Dec 21, 2014; Published date: Dec 23, 2014

Copyright: © 2014 Pacheco KG, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

We describe 1 case of pregnancy after the embolization of ovarian varicose veins in a patient with infertility and deep endometriosis.

Keywords: Pregnancy; Sclerotherapy; Embolization; Ovarian varicose veins; Endometriosis

Introduction

Endometriosis is an estrogen-dependent disease that is present in 60 to 70% of patients with chronic pelvic pain, dysmenorrhea, and dyspareunia [1]. Studies indicate that 40 to 50% of patients with endometriosis are associated with infertility [2].

Ovarian varicose veins may cause the same symptoms as endometriosis and are present in 50% of patients with chronic pelvic pain [3,4]. Furthermore, there is a relationship of the etiopathogenesis of endometriosis and pelvic varicose veins with estradiol and hormone receptors [5,6]. An elevated level of estradiol in varicose dilations in the pelvis may promote endometriosis. Although it has not been proven in the medical literature Galkin, et al. [7], suggests the hypothesis that ovarian varices alter the functions of the ovary, causing infertility in the same manner in which varicocele does in men [8]. We report a case of pregnancy in a woman with infertility and endometriosis after treatment with sclerotherapy and embolization of the ovarian varicose veins.

Case Report

The patient was a 31-year-old woman who complained of chronic pelvic pain, dysmenorrhea, dyspareunia and constipation for 10 years. She reported having taken hormones (progesterone) over the last three years in order to try to become pregnant; however, it had been unsuccessful. She underwent an MRI, which revealed deep endometriosis of the posterior pelvic compartment with signs of involvement of the rectal wall with a hematic cyst and/or endometrioma of the left ovary.

We decided to perform a transvaginal ultrasound with color Doppler, which showed varicose veins of the right ovarian venous plexus with a diameter of 7.2 mm and the left plexus with a diameter of 8.2 mm in the broad ligament of the uterus.

With the informed consent of the patient, we decided to perform the phlebography and embolization of the ovarian varicose veins, as the pelvic varices could have led to venous thrombosis and/or pulmonary embolism [9].

The presence of ovarian varices were confirmed by selective retrograde pelvic phlebography. We were able to catheterize the vena cava followed by the right gonadal vein with a 125 MPA cook catheter; using the right basilic vein as a pathway to realizing the selective retrograde pelvic phlebography, the "the varicose plexus" was highlighted. Through this catheter, we injected 6 ml of polidocanol 3% dense foam, reaching the varicose plexus side of the right and left sides of the ovary. Then, we placed 5 metal coils along the right gonadal vein. We inserted a catheter into the left renal vein with the aim of progressing through the left gonadal vein; however, this was not possible.

Three days after the procedure, the patient reported that chronic pelvic pain, from which she had suffered for ten years, had disappeared. In addition, the patient stated that she no longer was experiencing constipation, which had lasted for 8 days, and that she was having regular bowel movements and intestinal functioning. She began having two bowel movements a day. She was treated in April 2013 and became pregnant in August 2013. She gave birth by caesarean section in April 2014 to a female baby (Figures 1 and 2).

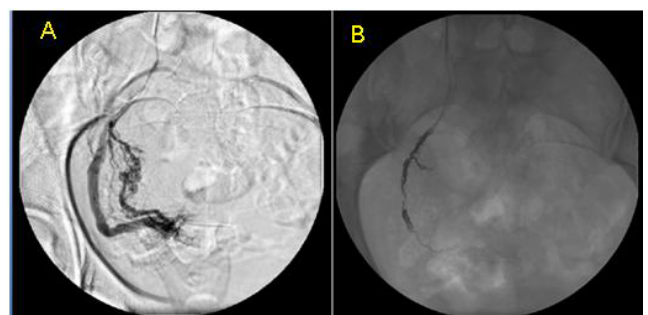


Figure 1: Selective retrograde phlebography of the right gonadal vein with reflux and varices on the varicose plexus on the side of the right ovary.

Discussion

The underlying cause of varicose veins in the testes and ovaries is the congenital failure of venous valves. It has been shown in autopsy studies in women 15% absence of valves in the left ovarian vein and 6% in the right [10]. Compression of the left renal vein by the superior mesenteric artery and multiple pregnancies may contribute to the development of pelvic varices [11,12].

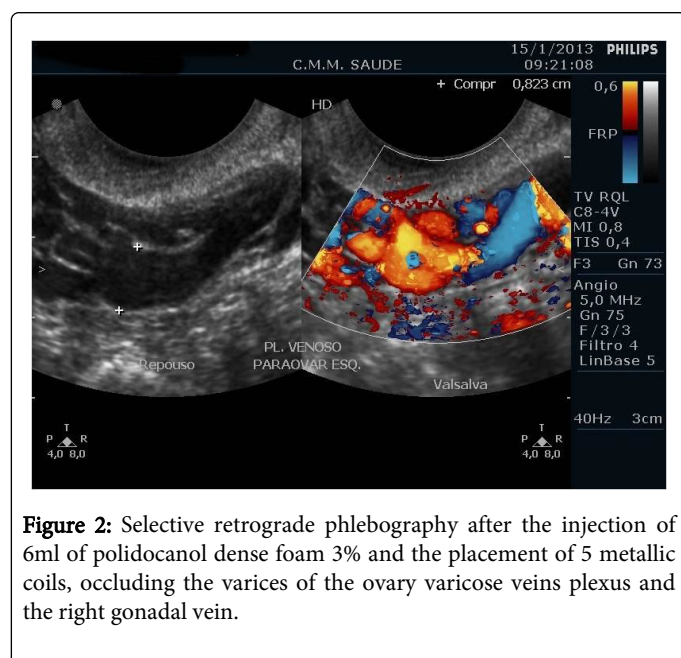


Figure 2: Selective retrograde phlebography after the injection of 6ml of polidocanol dense foam 3% and the placement of 5 metallic coils, occluding the varices of the ovary varicose veins plexus and the right gonadal vein.

Ultrasonography, computed tomography and magnetic resonance imaging are used to confirm the clinical suspicion of pelvic varices, with transvaginal ultrasound being the preferred test [13-15].

The exam that confirms dilated ovarian varices is selective venography of the pelvic veins [15]. Several authors have shown that the treatment of pelvic varices by embolization has good results and low rate of complications [16-20]. The pharmacological induction of a false pregnancy or menopause leads to a state of hypoestrogenism and improves the symptoms of ovarian endometriosis and varicose veins.

A scientific paper found that the levels of ovarian hormones collected in the groins of patients with pelvic varices is two times higher than that of the blood collected in the arm [5]. Venous hypertension beside the testicles in male patients is associated with oxidative stress, DNA fragmentation of sperm, changes in hormone production, altered testicular volume, and infertility [21]. Treatment of varicocele by surgery, embolization or sclerotherapy result in improved integrity of the sperm DNA and oxidative stress, increases fertility in pregnancy by intrauterine insemination and, in adolescents, the testicles begin to grow again [22].

Endometriosis is estrogen-dependent and results in a chronic inflammatory process. The most accepted theory to explain the pathogenesis is the theory of implantation that was described by Sampson in 1927 [23]. When the desquamated endometrium enters the peritoneal cavity and adheres to mesothelial layer by cadherin protein, a process of angiogenesis is essential for the development and deployment of peritoneal endometriosis [24]. It is considered that estrogen has a significant role in stimulating the VEGF (vascular endothelial growth factor) in the endometrium to promote

angiogenesis and the growth of the endometrium during the menstrual cycle [25].

Patients with endometriosis present an aberrant expression of estrogen and progesterone receptors and factors that interfere with angiogenesis [26-31]. In comparison, we can think about ovarian varices as having similar alterations as varices alongside the testicles. The results being oxidative stress (OS), damage to the DNA, and problems of infertility.

Park et al. found that OS may exercise an important role in the promotion of angiogenesis in the implantation of endometriosis and in the increase in the production of VEGF. Altered molecular genetic pathways may also contribute to the effects of OS in the pathogenesis of endometriosis and endometriosis-associated infertility [32]. The increase of DNA damage in spermatozoa, oocytes and embryos seems to be responsible for the numerous abortions and for fertilization and implantation failure among endometriosis patients [33].

Pacheco et al. sent a preview of our study to the Brazilian College of Surgeons, from 2013 to 2014, in which we examined 50 patients, 25 with diagnostically-confirmed endometriosis and 25 without. There was a prevalence of ovarian varices with a diameter ranging from 5 mm to 8 mm in 80% of the group with endometriosis and 24% in the control group.

In Medical Literature, we found 17 cases of pregnancy after the embolization of pelvic varicose veins in women with a history of infertility. A medical team reported that they treated 19 patients considered to be infertile by embolization of the pelvic varicose veins and documented that 14 of them became pregnant [7].

Other authors have also described two cases of pregnancy after embolization of pelvic varices [34].

Ghosh et al. reports a case of successful pregnancy after sclerotherapy of ovarian varicose veins with ethamolin [35]. Carolyn Wassong, et al. [36] describes a 13 year old child with endometriosis associated with ovarian varices. As the Medical Literature confirms positive results in the treatment of varicose veins in the lower limbs, in the ovarian varices, and in the male varicocele, we could begin think that there may be good results in the treatment of ovarian varicose veins in some cases of endometriosis.

Conclusion

Venous hypertension beside the ovary may result in the disturbance in the gland, just as it occurs in the testis in men, generating an imbalance of the genetic, hormonal, and immunological aspect. In women, this may provoke the chronic inflammatory process and Oxidative Stress inherent to endometriosis. We suggest that more studies be conducted in order to evaluate the role of pelvic varicose veins in infertility and endometriosis.

References

1. Borges LS, Rosa e Silva JC, Rosa e Silva ACJS, Aguiar FM, Poli Neto OB, et al. (2005) Avaliação da concordância diagnóstica entre métodos não invasivos e endoscopia na investigação de infertilidade. *Rev Bras Ginecol Obstet* 27: 401-406.
2. Wheeler JM (1989) Epidemiology of endometriosis-associated infertility. *J Reprod Med* 34: 41-46.
3. Beard RW, Highman JH, Pearce S, Reginald PW (1984) Diagnosis of pelvic varicosities in women with chronic pelvic pain. *Lancet* 2: 946-949.

4. Giacchetto C, Cotroneo GB, Marincolo F, Cammisuli F, Caruso G, et al. (1990) Ovarian varicocele: ultrasonic and phlebographic evaluation. *J Clin Ultrasound* 18: 551-555.
5. Ascitutto G, Mumme A, Ascitutto KC, Geier B (2010) Oestradiol levels in varicose vein blood of patients with and without pelvic vein incompetence (PVI): diagnostic implications. *Eur J Vasc Endovasc Surg* 40: 117-121.
6. Hervé MA, Meduri G, Petit FG, Domet TS, Lazennec G, et al. (2006) Regulation of the vascular endothelial growth factor (VEGF) receptor Flk-1/KDR by estradiol through VEGF in uterus. *J Endocrinol* 188: 91-99.
7. Galkin EV, Grakova LS, Naumova EB (1991) [Roentgeno-endovascular surgery of hypofunctional ovaries in varicosities of the ovarian veins]. *Vestn Rentgenol Radiol* : 51-59.
8. Kuligowska E, Deeds L 3rd, Lu K 3rd (2005) Pelvic pain: overlooked and underdiagnosed gynecologic conditions. *Radiographics* 25: 3-20.
9. Everarts P, Poelaert D, Bormans P, Guisgand M, Debehogne G, et al. (2008) [Pelvic varicose veins thrombosis in a patient with pulmonary embolism]. *JBR-BTR* 91: 200-202.
10. Ahlberg NE, Bartley O, Chidekel N (1966) Right and left gonadal veins. An anatomical and statistical study. *Acta Radiol Diagn (Stockh)* 4: 593-601.
11. Scultetus AH, Villavicencio JL, Gillespie DL, Kao TC, Rich NM (2002) The pelvic venous syndromes: analysis of our experience with 57 patients. *J Vasc Surg* 36: 881-888.
12. Ganesan A, Upponi S, Hon LQ, Uthappa MC, Warakaulle DR, et al. (2007) Chronic pelvic pain due to pelvic congestion syndrome: the role of diagnostic and interventional radiology. *Cardiovasc Intervent Radiol* 30: 1105-1111.
13. Park SJ, Lim JW, Ko YT, Lee DH, Yoon Y, et al. (2004) Diagnosis of pelvic congestion syndrome using transabdominal and transvaginal sonography. *AJR Am J Roentgenol* 182: 683-688.
14. Ratnam LA, Marsh P, Holdstock JM, Harrison CS, Hussain FF, et al. (2008) Pelvic vein embolisation in the management of varicose veins. *Cardiovasc Intervent Radiol* 31: 1159-1164.
15. Pelvicas BV, Engelhorn CA, Filhos DM, Barros FS, Coelho NA (2006) Guia pratico de ultrasonografia vascular. Rio de Janeiro: Dilivros 191-195.
16. Kim HS, Malhotra AD, Rowe PC, Lee JM, Venbrux AC (2006) Embolotherapy for pelvic congestion syndrome: long-term results. *J Vasc Interv Radiol* 17: 289-297.
17. d'Archambeau O, Maes M, De Schepper AM (2004) The pelvic congestion syndrome: role of the "nutcracker phenomenon" and results of endovascular treatment. *JBR-BTR* 87: 1-8.
18. Kwon SH, Oh JH, Ko KR, Park HC, Huh JY (2007) Transcatheter ovarian vein embolization using coils for the treatment of pelvic congestion syndrome. *Cardiovasc Intervent Radiol* 30: 655-661.
19. Capasso P, Simons C, Trotteur G, Dondelinger RF, Henroteaux D, et al. (1997) Treatment of symptomatic pelvic varices by ovarian vein embolization. *Cardiovasc Intervent Radiol* 20: 107-111.
20. Creton D, Hennequin L, Kohler F, Allaert FA (2007) Embolisation of symptomatic pelvic veins in women presenting with non-saphenous varicose veins of pelvic origin - three-year follow-up. *Eur J Vasc Endovasc Surg* 34: 112-117.
21. Saleh RA, Agarwal A, Sharma RK, Said TM, Sikka SC, et al. (2003) Evaluation of nuclear DNA damage in spermatozoa from infertile men with varicocele. *Fertil Steril* 80: 1431-1436.
22. Chen SS, Huang WJ, Chang LS, Wei YH (2008) Attenuation of oxidative stress after varicocelectomy in subfertile patients with varicocele. *J Urol* 179: 639-642.
23. Sampson JA (1927) Metastatic or Embolic Endometriosis, due to the Menstrual Dissemination of Endometrial Tissue into the Venous Circulation. *Am J Pathol* 3: 93-110.
24. Nisolle M, Casanas-Roux F, Wyns C, de Menten Y, Mathieu PE, et al. (1994) Immunohistochemical analysis of estrogen and progesterone receptors in endometrium and peritoneal endometriosis: a new quantitative method. *Fertil Steril* 62: 751-759.
25. Niklaus AL, Aberdeen GW, Babischkin JS, Pepe GJ, Albrecht ED (2003) Effect of estrogen on vascular endothelial growth/permeability factor expression by glandular epithelial and stromal cells in the baboon endometrium. *Biol Reprod* 68: 1997-2004.
26. Lessey BA, Castelbaum AJ, Sawin SW, Buck CA, Schinnar R, et al. (1994) Aberrant integrin expression in the endometrium of women with endometriosis. *J Clin Endocrinol Metab* 79: 643-649.
27. Noble LS, Simpson ER, Johns A, Bulun SE (1996) Aromatase expression in endometriosis. *J Clin Endocrinol Metab* 81: 174-179.
28. Burney RO, Hamilton AE, Aghajanova L, Vo KC, Nezhat CN, et al. (2009) MicroRNA expression profiling of eutopic secretory endometrium in women with versus without endometriosis. *Mol Hum Reprod* 15: 625-631.
29. Aghajanova L, Hamilton A, Kwintkiewicz J, Vo KC, Giudice LC (2009) Steroidogenic enzyme and key decidualization marker dysregulation in endometrial stromal cells from women with versus without endometriosis. *Biol Reprod* 80: 105-114.
30. Novembri R, Borges LE, Carrarelli P, Rocha AL, De Pascalis F, et al. (2011) Impaired CRH and urocortin expression and function in eutopic endometrium of women with endometriosis. *J Clin Endocrinol Metab* 96: 1145-1150.
31. Bulun SE, Cheng YH, Yin P, Imir G, Utsunomiya H, et al. (2006) Progesterone resistance in endometriosis: link to failure to metabolize estradiol. *Mol Cell Endocrinol* 248: 94-103.
32. Wu Y, Kajdacsy-Balla A, Strawn E, Basir Z, Halverson G, et al. (2006) Transcriptional characterizations of differences between eutopic and ectopic endometrium. *Endocrinology* 147: 232-246.
33. Mansour G, Abdelrazik H, Sharma RK, Radwan E, Falcone T, et al. (2009) Lcarnitine supplementation reduces oocyte cytoskeleton damage and embryo apoptosis induced by incubation in peritoneal fluid from patients with endometriosis. *Fertil Steril*. 91: 2079-2086.
34. Tarazov PG, Prozorovskij KV, Ryzhkov VK (1997) Pelvic pain syndrome caused by ovarian varices. Treatment by transcatheter embolization. *Acta Radiol* 38: 1023-1025.
35. Ghosh A, Shafie-Pour H, Ayers KJ (2006) Laparoscopic sclerotherapy in a case of pelvic congestion syndrome. *BJOG* 113: 610-611.
36. Wassong C, Shah B, Kanayama M, Bjarnason H, Milla SS (2012) Radiologic findings of pelvic venous congestion in an adolescent girl with angiographic confirmation and interventional treatment. *Pediatr Radiol* 42: 636-640.