Laparoscopic detorsion of isolated idiopathic Fallopian tube torsion: conservative treatment in a 13-year-old girl

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Isolated fallopian tube torsion (IFTT) is a rare entity in adolescent girls. Invasive surgery, salpingectomy, was used during the initial surgery or at the time of recurrent torsion in 87% of previously reported cases. Herein, the authors present an adolescent premenarcheal girl with idiopathic IFTT, which was treated by laparoscopic detorsion, to emphasize that tubal torsion should be included in the list of differential diagnoses of abdominal pain in adolescent girls. Minimally invasive, organ-saving surgery should be done, and the child should be followed up for recurrent torsion.

Key words: Fallopian tube, torsion, idiopathic, isolated, adolescent, child, laparoscopy, minimally invasive surgery.

Torsion of a fallopian tube is usually seen as a part of en-bloc torsion of the adnexal structures. Torsion of the tube without association with an ovarian torsion is termed as isolated fallopian tube torsion (IFTT)[1]. Isolated torsion of a fallopian tube can be precipitated by intrinsic and extrinsic etiologies[2]. The reported intrinsic pathologies are pelvic inflammatory disease, hydrosalpinx, prior tubal surgery, and primary fallopian tube malignancy. The extrinsic pathologies are scarring from endometriosis, prior pelvic surgery, gravid uterus, malignancy or tumor of the adjacent structures, and paraovarian or paratubal cysts. The term "idiopathic" refers to the absence of the above- mentioned precipitating etiologic factors. IFTT is a very rare pathology that is encountered in one in 1.5 million women[3]. Only 43 pediatric cases of IFTT had been reported to date in the English-language medical literature, and interestingly, 80% of the cases were treated with salpingectomy during the initial surgery or at the time of recurrent torsion after detorsion[2-27]. This case is reported to illustrate that IFTT can be encountered as a cause of abdominal pain in adolescent girls; conservative management, as laparoscopic detorsion of the tube without salpingectomy, should be preferred.

Case Report

A 13-year-old girl presented with left-sided abdominal pain for three days. She reported having regular menstrual cycles, and was on the first day of her cycle at the time of her admission. Her urinary and bowel habits were normal. She received no benefit from antibiotic treatment commenced in another hospital with the presumptive diagnosis of urinary tract infection.

The physical examination revealed no tenderness, defense or mass. Laboratory examinations showed white blood cell count, 10800 (N: 4100-11200); alpha fetoprotein, 1.77 IU/ml (N: 0-5.8); and β-human chorionic gonadotropin, <1.20 mIU/ml (N: 0-5). Blood biochemistry and urinalysis were also normal. Plain erect and supine abdominal X-rays were normal. Pelvic ultrasonography (US) revealed an edematous, enlarged, tortuous, and cystic left fallopian tube (hydrosalpinx) (Fig. 1), free pelvic fluid, and minimally enlarged left ovary (5x3x2 cm). The uterus, right tube and right ovary were normal. The differential diagnosis between pelvic inflammatory disease and torsion could not be made. Magnetic resonance imaging revealed a tubular, tortuous, cystic left adnexal mass (6x3x4 cm) and normal left ovary (Figs. 2a, 2b). The mass was assumed as hydrosalpinx.

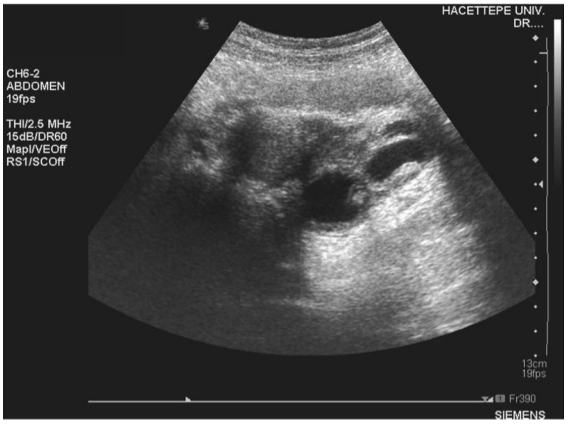

Fig. 1. Ultrasound shows tortuous, cystic tubular structure consistent with hydrosalpinx of the left fallopian tube.

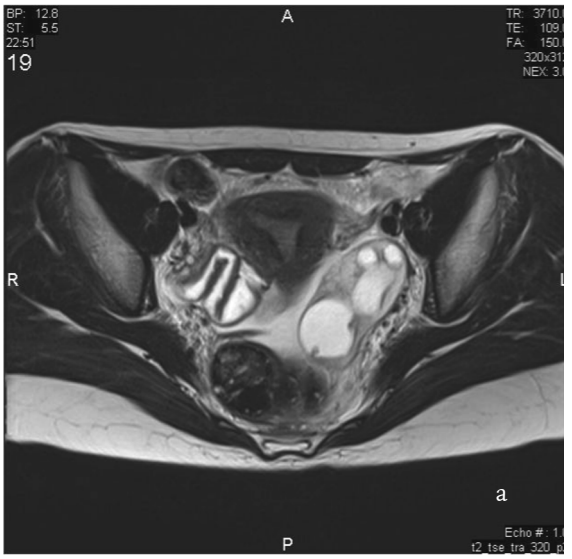

Fig. 2. T2-enhanced magnetic resonance image reveals: a. Hydrosalpinx appearance in the left adnexal region, and b. Hydrosalpinx and ovary (sagittal section) in the left adnexal region.

Laparoscopy demonstrated a 720° torsion of the left fallopian tube. The left ovary was mildly edematous. Detorsion was performed by using two additional port entries. The circulation and color of the tube were quite normal after reduction. No additional pathology was encountered in the pelvis or abdomen.

The postoperative course was uneventful with complete improvement. Follow-up pelvic US revealed a mild residual dilation of the left tube and normal left ovary on the first postoperative day. The patient was discharged on the second postoperative day. Repeated follow-up pelvic US also revealed normal left ovary (3x4x4 cm) and a simple cyst (25x35x35 mm) within the left ovary in the first postoperative two weeks. The left fallopian tube was also seen as normal. Follow-up pelvic US at the end of the third postoperative month showed completely normal pelvic organs.

Discussion

Isolated fallopian tube torsion (IFTT) is a rare entity and comprises a minor group among etiologies of abdominal or pelvic pain in adolescents. Forty-three pediatric cases have been reported to date[2-27]. To the best of our knowledge, a precipitating factor that may cause torsion of a fallopian tube was reported in more than half of the cases[4,6,7,10,14,25-27]. Adnexal or paratubal cysts have been reported as an accompanying pathology in these articles. The remaining cases can be assumed as idiopathic tubal torsion, including the present case.

The exact mechanism is not known in idiopathic cases. Intrinsic abnormalities such as abnormal length of the mesosalpinx or a spiral course of the salpinx may be more likely. The proposed mechanisms have included activation of ovarian and tubal function by stimulation of the reproductive axis with high follicle stimulating hormone (FSH) levels long before the onset of menses in a case with asymptomatic distal occlusion of the tube and asymptomatic pelvic inflammation in the adnexal area, which causes distal obstruction of the tube[6]. However, it is not clear whether hydrosalpinx developing as a result of tubal obstruction due to various etiologies precipitates torsion or if hydrosalpinx is the expectant result of IFTT. We think hydrosalpinx is a secondary finding in IFTT cases and not to be blamed as an

underlying anatomical factor in light of the findings of our case. We clearly determined that the hydrosalpinx resolved promptly after laparoscopic detorsion and did not recur.

The diagnosis of IFTT usually cannot be made preoperatively. The typical presentation is acute lower abdominal pain associated with nausea and vomiting[4,6]. However, these features are not specific clinical signs and cannot help in the differential diagnosis.

Abdominopelvic US may help by showing the hydrosalpinx resulting from a torsioned tube, which is seen as a tortuous fluid-filled tubular structure that folds onto itself forming an S or C shape. The finding of an S- or C-shaped hydrosalpinx in association with normal ovaries and the absence of associating adnexal mass shortens the list of differential diagnoses. Magnetic resonance imaging can also show similar findings but should be reserved as a further radiological examination method.

The predilection side of adnexal torsion is the right side, with a 3 to 2 rate in childhood[28]. Currently, the exact ratio for the IFTT side cannot be known because of the limited number of cases.

The most striking information derived from the current literature about the subject is the type of treatment used in IFTT cases. Salpingectomy had been used in most cases (87%). We think that this type of management reflects an old understanding on this issue and should be revised. Salpingectomy may solve the problem radically in children with IFTT through prevention of recurrence. Additionally, theoretically, one fallopian tube is sufficient for normal fertilization. However, the decision of unilateral salpingectomy may cause the child to face an infertility issue if the remaining tube becomes diseased by torsion, infection including perforated appendicitis, or ectopic pregnancy. Similar discussion has been widely made on the treatment options for ovarian torsion. Many pediatric surgeons performed oophorectomy for apparently necrotic ovaries due to torsion. However, recent reports changed the protocols from excision to simple detorsion[28,29]. The ciliated cells of the fallopian tubes have been found viable in half of the salpingectomy specimens in a relatively large series of IFTT[6]. This finding also encourages the pediatric surgeon to choose conservative management. After pondering all this scientific information, we definitely favor tubal conservation by using minimally invasive treatment methods.

Laparoscopy is undoubtedly the method of choice for both the definitive diagnosis, with thorough evaluation of surrounding structures, and the treatment of IFTT. We performed detorsion using a triple-port technique.

Puncture of the hydrosalpinx was used by some authors in previous reports[6,30]. We felt that it was unnecessary in the present case. We determined complete resolution of hydrosalpinx with repeated US examinations. The hydrosalpinx had resolved completely within two weeks. Therefore, we strongly suggest postoperative US follow-ups after detorsion. A second-look laparoscopy would have been planned if the hydrosalpinx had not resolved.

The high recurrence rates were another interesting point following conservative treatment. Recurrent torsions were encountered within 43 to 83 days following detorsion in a previous series[6]. This observation raises a question, "Is salpingopexy required in IFTT cases undergoing detorsion?". The answer to this question remains unknown at the moment but will become clearer when the number of conservatively treated cases increases.

Isolated tubal torsion should be included in the list of differential diagnoses of abdominal pain in adolescent girls. Since the medical history and physical examination findings may not be suggestive, pelvic US and/or magnetic resonance should be used. Definite diagnosis and conservative treatment can be done using minimally invasive methods. Laparoscopic detorsion and follow-up with US to document resolution of the hydrosalpinx are recommended as means of conservative treatment that should be attempted in every patient. High recurrence rates after detorsion may prompt salpingopexy in the future.

REFERENCES

1. Merlini L, Anooshiravani M, Vunda A, Borzani I, Napolitano M, Hanquinet S. Noninflammatory fallopian tube pathology in children. Pediatr Radiol 2008; 38: 1330-1337.
2. Schrager J, Robles G, Platz T. Isolated fallopian tube torsion: a rare entity in a premenarcheal female. Am Surg 2012; 78: 118-119.
3. Orazi C, Inserra A, Lucchetti MC, Schingo PM. Isolated tubal torsion: a rare cause of pelvic pain at menarche. Sonographic and MR findings. Pediatr Radiol 2006; 36: 1316-1318.
4. Harmon JC, Binkovitz LA, Binkovitz LE. Isolated fallopian tube torsion: sonographic and CT features. Pediatr Radiol 2008; 38: 175-179.
5. Terada Y, Murakami T, Nakamura SI, et al. Isolated torsion of the distal part of the fallopian tube in a premenarcheal 12-year-old girl: a case report. Tohoku J Exp Med 2004; 202: 239-243.
6. Boukaidi SA, Delotte J, Steyaert H, et al. Thirteen cases of isolated tubal torsions associated with hydrosalpinx in children and adolescents, proposal for conservative management: retrospective review and literature survey. J Pediatr Surg 2011; 46: 1425-1431.
7. Dadhwal V, Gupta N, Gupta B, Deka D, Mittal S. Laparoscopic management of isolated fallopian tube torsion in a premenarchal 13-year-old adolescent girl. Arch Gynecol Obstet 2009; 279: 909-910.
8. Jamieson MA, Soboleski D. Isolated tubal torsion at menarche - a case report. J Pediatr Adolesc Gynecol 2000; 13: 93-94.
9. Schollmeyer T, Soyinka AS, Mabrouk M, Jonat W, Mettler L, Meinhold-Heerlein I. Chronic isolated torsion of the left fallopian tube: a diagnostic dilemma. Arch Gynecol Obstet 2008; 277: 87-90.
10. Grover S. Torsion causing interruption of the ampullary portion of the fallopian tube. Fertil Steril 2007; 88: 968.e13-14.
11. Adekanmi OA, Barrington JW, Edwards G, Farrell D. Isolated torsion and haemorrhagic infarction of a normal fallopian tube in an eleven year old girl. Br J Obstet Gynaecol 2000; 107: 1047-1048.
12. Goktolga U, Ceyhan T, Ozturk H, et al. Isolated torsion of fallopian tube in a premenarcheal 12-year-old girl. J Obstet Gynaecol Res 2007; 33: 215-217.
13. Isenberg, JS, Silich R. Isolated torsion of the normal fallopian tube in premenarcheal girls. Surg Gynecol Obstet 1990; 170: 353-354.
14. Rizk DE, Lakshminarasimha B, Joshi S. Torsion of the fallopian tube in an adolescent female: a case report. J Pediatr Adolesc Gynecol 2002; 15: 159-161.
15. Lineberry TD, Rodriguez H. Isolated torsion of the fallopian tube in an adolescent: a case report. J Pediatr Adolesc Gynecol 2000; 13: 135-137.
16. Bondioni MP, McHugh K, Grazioli L. Isolated fallopian tube torsion in an adolescent: CT features. Pediatr Radiol 2002; 32: 612-613.
17. Elchalal U, Caspi B, Schachter M, Borenstein R. Isolated tubal torsion: clinical and ultrasonographic correlation. J Ultrasound Med 1993; 12: 115-117.
18. Lau HY, Huang LW, Chan CC, Lin CL, Chen CP. Isolated torsion of the fallopian tube in a 14-year-old adolescent. Taiwan J Obstet Gynecol 2006; 45: 363-365.
19. van der Zanden M, Nap A, van Kints M. Isolated torsion of the fallopian tube: a case report and review of the literature. Eur J Pediatr 2011; 170: 1329-1332.
20. Markhardt BK, Jones L, Drugas GT. Isolated torsion of the fallopian tube in a menarchal 11-year-old girl. Pediatr Emerg Care 2008; 24: 374-376.
21. Panteli C, Minocha A, Kulkarni MS, Tsang T. The role of laparoscopy in the management of adnexal lesions in children. Surg Laparosc Endosc Percutan Tech 2009; 19: 514-517.
22. Gaied F, Emil S, Lo A, Baird R, Laberge J-M. Laparoscopic treatment of isolated salpingeal torsion in children: case series and a 20-year review of the literature. J Laparoendosc Adv Surg Tech A 2012; 22: 941-947.
23. Wong SW, Suen SH, Lao T, Chung KH. Isolated fallopian tube torsion: a series of six cases. Acta Obstet Gynecol Scand 2010; 89: 1354-1356.
24. Holland AJ, Barker AP, Robins PD. Isolated torsion of the fallopian tube in a premenarchal girl. Pediatr Surg Int 1995; 11: 47-49.
25. Seshadri S, Morris A, Uchil D, Joloaso A. Bilateral paratubal cysts with co-existent fallopian tube torsion in an adolescent. J Obstet Gynaecol 2009; 29: 564-565.
26. Bloom RK, Larusso S. Paratubal cyst with isolated torsion of the fallopian tube. J Diagn Med Sonography 2009; 25: 58-61.
27. Ferrera PC, Kass LE, Verdile VP. Torsion of the fallopian tube. Am J Emerg Med 1995; 13: 312-314.
28. Cass DL. Ovarian torsion. Semin Pediatr Surg 2005; 14: 86-92.
29. Cohen SB, Oelsner G, Seidman DS, Admon D, Mashiach S, Goldenberg M. Laparoscopic detorsion allows sparing of the twisted ischemic adnexa. J Am Assoc Gynecol Laparosc 1999; 6: 139-143.
30. Pinkert M, Klein Z, Tepper R, Beyth Y. Hydrosalpinx with adnexal torsion in an adolescent virgin patient-a diagnostic dilemma: case report and review of the literature. J Pediatr Adolesc Gynecol 2006; 19: 297-299.