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Pelvic varices in paediatric surgical practice: current state of the problem

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Considering that there are no official statistic data concerning the prevalence rate of pelvic varicose veins and clear diagnostic and treatment criteria of above mentioned disease and, besides, a presence of evidence-based negative impact of pelvic varices on internal sex organs in women of reproductive age, a detailed study of pelvic congestion syndrome in paediatric practice is required. Moreover, well-informed physicians ensure early diagnostics and efficient treatment, which will permit to reduce the frequency of an unnecessary laparotomy in the case of abdominal pains in girls. Thus, it is necessary to discuss the wider application of the minimally invasive surgery techniques in treatment of abdominal pains in girls.

Key words: pelvic varices, laparoscopy, girls, dysuria.

At the present time, the science statistics concerning the prevalence of varicose veins of the pelvic floor in paediatric female patients, the clear criteria of the certain approaches in treatment, the accurate clinical and diagnostic correspondence between a stage of a pathological process and the structural changes in internal sex organs in female adolescences are not developed. At the same time, chronic pelvic pain (CCP) in girls that requires differential diagnosis is still among the topical issues. In case the pain syndrome is not amenable to conservative therapy, a diagnostic algorithm often includes such diagnostic technique as irrigography to exclude colon pathology. In such a case conservative methods of treatment are not always efficient. In addition, dysuric symptom complex in clinical course of the disease often requires the consultation of urologist who assigns a symptomatic therapy as a rule [1].

Abdominal pain syndrome is the main clinical manifestation of pelvic varicose veins in girls. More cases usually have a history of intermittent pain in the second phase of a menstrual cycle that is located in the lower part of abdomen, sometimes radiating to lumbar-sacral region. Dysmenorrhea may be discovered in almost every fourth girl with pelvic varices [2].

Thus, varicose veins of pelvis in the paediatric surgical practice generally are intraoperative incidental findings in diagnostic laparoscopy for the suspected acute surgical pathology of abdomen in girl.

To comprehensively review the medical literature regarding chronic pelvic pain and pelvic varices in female patients in paediatrics.

A domestic and foreign literature search was performed using the Internet databases in addition to reviewing the bibliographies of relevant articles. We consider diagnostic methods and treatment of pelvic varicose veins and chronic pelvic pain in female patients in terms of paediatric age group.

During the preparation of the article analyzes the domestic and foreign literature on the diagnosis and treatment of pelvic varicose veins and chronic pelvic pain in women with a focus on children's age.

M.A. Cherepanova (2011) showed that statistically significant risk factors for the development of pelvic varicose veins are as follows: lower abdominal pain, menarche before 12 years of age, dyspareunia, varicose veins of the lower extremities, obesity, pelvic adhesions, chronic salpingoophoritis, ovarian tumours, uterine fibroids, genital endometriosis [3].

Pelvic congestion syndrome (PCS) or pelvic varicocele is becoming increasingly common cause of chronic pelvic pain (CPP) [4]. The relationship between both endometriosis and infertility in women and pelvic varices are proved [5]. S.D. Mathias et al. (1996) have studied the prevalence of CPP in the US and found that one in seven

Fig. 1. Ultrasound picture (B-mode and Doppler) of pelvic varicocele [2]

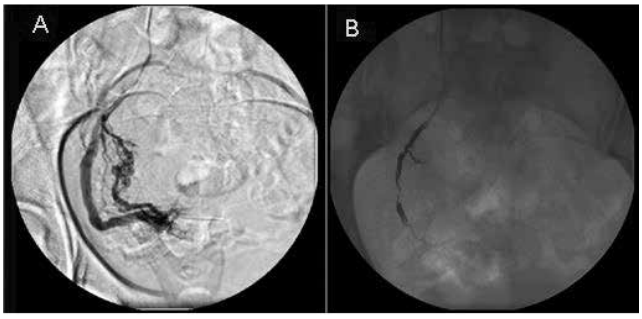

Fig. 2. Selective retrograde venography (the right ovarian vein is dilated) [5]

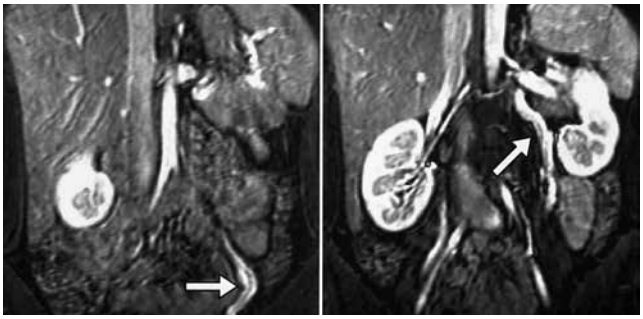

Fig. 3. Contrasted-enhanced MR venogram of passive reflux from the left renal vein into the left ovarian vein [14]

women had a history of CPP, which disrupted daily activity in 45% of women. In addition, the authors have discovered the annual medical cost for diagnosis and treatment of CPP is estimated to be about $881.5 million [6].

A.M. Grigorenko (2012) studied the frequency of pelvic varicose veins in the structure of hospital gynecological pathology. So, PCS was observed in female patients with oophoritis in 3.9% of cases, with dysfunctional uterine bleeding in 24.5%, with ovarian cysts – 33.7%, uterine fibroids – 21.1%, ectopic pregnancy and ovarian apoplexy 27.2% and 21.2% respectively. Pelvic varicose veins were discovered with ultrasound in 21.7% of patients with genital prolapse, in 18.7 % of women with endometriosis and 82.0% of females with polycystic ovaries [7]. K. G. Pacheco, M. R. F. de Oliveira (2016) performed ultrasonography and discovered that pelvic varices were observed in 80 % of women with endometriosis and suggested, therefore, that oxidative stress produces an effect on ovaries and caused a chronic inflammatory process as a pre-condition for the development of endometriosis [8].

F. Sh. Mamedova (2006) has studied haemodynamic causes of pelvic varicocele in girls and identified a primary insufficiency of ovarian veins as a key factor of PCS. The main ultrasonographic sign of pelvic varices is dilation of ovarian plexus and uterine venous plexus. These abnormalities are characterized by regional and visceral haemodynamic disorders of pelvic organs and ovarian volume decrease. The left ovarian vein is >4.5 mm in diameter in patients with PCS. The presence of a backflow slows down the uterine venous outflow leading to the disruption of the uterine vascular resistance of arteries and

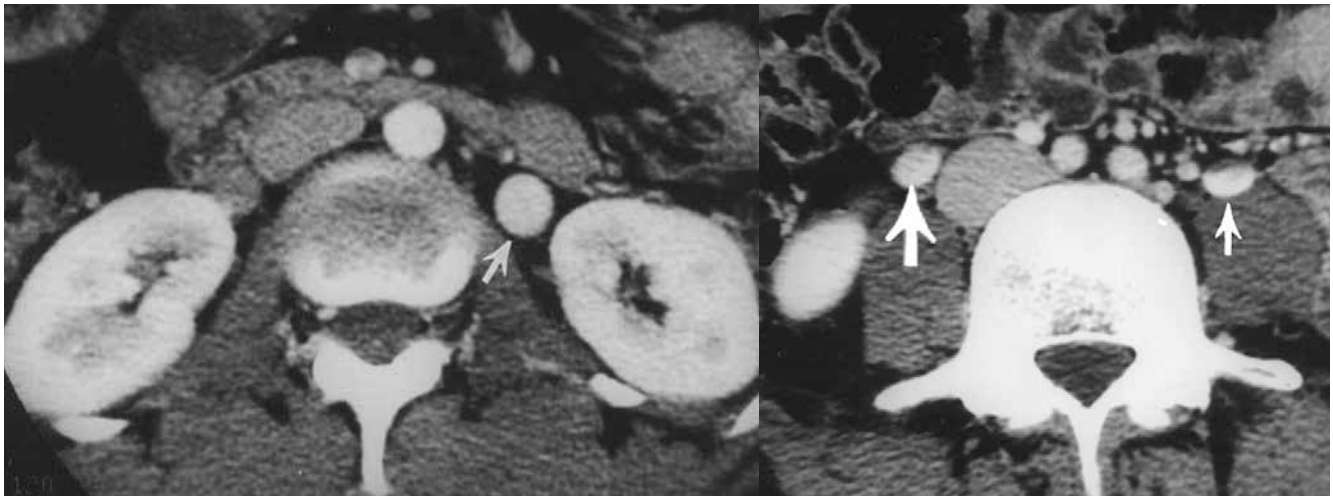

Fig. 4. CT angiography (the arrow shows the varicose ovarian veins) [15]

Fig. 5. Laparoscopic pictureof the right pelvic varicocele in girl (own experience)

arterial perfusion of the ovaries (Fig. 1) [9]. Other authors confirmed the same results [2, 10].

It should be admitted that many scholars recognize ultrasonography with incomplete empted bladder as the non-invasive diagnostic procedure when pelvic varicose veins are discovered [11, 12].

D. Gasparini et al. (1998) recommended the invasive methods such as phlebography for use in the diagnosis of pelvic varicose veins (Fig. 2) [13].

An advanced diagnostic technique, especially in asymptomatic cause of the disease, is a contrast-enhanced magnetic resonance imaging, which can visualise the reflux from the left renal vein into the left ovarian vein (Fig. 3) [14].

A computed tomography with angiography (CT angiography) is also widely employed in diagnosis of pelvic varicose veins (Fig. 4) [15].

One of the specified cause of the development of pelvic varicocele in girls is «nutcracker syndrome» (or left renal vein entrapment syndrome) which refers to compression of the left renal vein most commonly between abdominal aorta and superior mesenteric artery. In such a case, clinical course of CPP is associated with proteinuria and/or microscopic haematuria [16, 17]. K. Burnand et al. (2011) described a case of laparoscopically diagnosed pelvic varices in female adolescent as a manifestation of the May – Thurner syndrome (or iliac vein compression syndrome) that may cause deep venous thrombosis [18].

According to N. I. Pavlenko et al. (2015) CPP syndrome is observed in 40% of female adolescents of 13 – 15 years of old with pelvic varices (lower abdominal pain), whereas in girls older than 15 years CPP is noted in 100% of cases. Dysuria occurs in 5% and 20% of female adolescents respectively. The patients with diagnosed ovarian vein more than 4 mm in diameter were recommended the laparoscopic surgical treatment (Ivanissevich procedure) [1].

A. S. Neimark, N. V. Shelkovnikova (2012) pointed out the interconnection between dysuric disorders and pelvic varicose veins in women. Embolisation of ovarian vein demonstrated elimination of dysuric disorders in 86 % of women [19].

C. Wassong et al. (2012) described the case of 13-year-old girl who had a 9-month history of chronic

pelvic pain. During laparoscopic operation endometriosis and pelvic varices were diagnosed. Then venography and embolization of the ovarian veins were performed [20]. However, A. M. Borahay et al. (2012) described a case of profuse uterine bleeding after embolisation of the pelvic veins that was complicated and resulted in hysterectomy in 34-year-old woman [21].

Some authors have underlined that laparoscopy is a procedure of choice in paediatric practice for CPP syndrome, which helps not only diagnose, but, if necessary, exclude the cause of CPP in girls [10, 22].

S. I. Zhuk et al. (2016) proved efficacy of the employment of surgical treatment, including laparoscopy, in the cases of inefficient conservative treatment of patients with third degree pelvic varices in women [23]. Laparoscopy as a method of complex treatment of above mentioned disease, especially in the diagnosis of concomitant hormonal disorders, is approved by many domestic researchers [24, 25].

So, diagnostic laparoscopy in girls with abdominal pain syndrome aims at excluding the acute surgical pathology and makes it possible both to diagnose pelvic varicocele and provide surgical correction of the identified abnormalities (Fig. 5).

Conclusion. To summarize the given above views of the researches, we come to conclusion that pelvic varicose veins in paediatrics is underinvestigated issue. There is no undisputed detailed clinical practice guideline of the disease (including surgical approach). Lack of knowledge about this problem and especially its treatment in paediatric medical services, including paediatric surgeons and paediatric gynaecologists, can lead to misdiagnose, late and inadequate treatment in girls, and in adulthood can result in fatal impaired or deterioration quality of life.

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