

<http://dx.doi.org/10.35630/2199-885X/2020/10/3.18>

EXPERIENCE OF TREATMENT OF SPLENIC CYSTS IN CHILDREN

Received 10 July 2020;
Received in revised form 23 August 2020;
Accepted 25 August 2020

Galina Rumyantseva¹ , Alexander Kazakov^{2✉} ,
Sergej Volkov¹ , Akif Yusufov , Vladimir Kartashov¹ ,
Yuriy Brevdo²

¹ Tver State Medical University, Tver;

² Children Regional Clinical Hospital, Tver, Russia

✉ drkazakov@mail.ru

ABSTRACT — The problem of treatment of spleen cysts in children has not lost its relevance at the present time. The choice of medical tactics at the present stage is far from unification. 26 children were treated from 2007 to 2020. 23 (88.5%) children were operated on. Sonography was the main diagnostic method. More often primary (true) spleen cysts prevailed. An analysis of our own results showed that the method of choice was laparoscopic fenestration, minimizing the risk of recurrence. In one case (3.8%) there was a complication in the form of bleeding, which required splenectomy. There were no fatal outcomes.

KEYWORDS — spleen cysts, children, laparoscopy, sonography.

INTRODUCTION

Spleen cysts in children are quite rare. They are mainly represented by congenital cysts, lymphangiomas and hemangiomas, post-traumatic hematomas, and, sometimes, echinococcal cysts, angiosarcomas and lymphomas [1]. Spleen cysts, especially large ones, are potentially dangerous, since the risk of organ damage and the occurrence of intra-abdominal bleeding is significantly increased [2]. Such a complication often ends with splenectomy. It is known that the spleen is an immunocompetent organ and its removal leads to a *post-splenectomy* syndrome [3, 4]. Nowadays, splenectomy is not a key option for most surgeons, not only because of spleen damage, but also because of benign neoplasms [5]. The treatment of spleen cysts is a debatable issue, as there is no single treatment tactic [6]. An alternative spleen-preserving option is laparoscopy with fenestration of the cavity [7, 8]. Percutaneous puncture methods are not successful in all cases, because de-epithelialization of the cyst cavity by various aggressive chemical agents is not always able to stop the production of cyst contents. The combined method of laparoscopic fenestration with superselective occlusion of the spleen vessels is not available to a

wide range of pediatric surgeons [9]. The work evaluates the effectiveness of therapeutic methods.

Purpose

analysis of the results and selection of the optimal treatment method for children with non-parasitic spleen cysts.

MATERIALS AND METHODS

From 2007 to 2020, 26 children with non-parasitic spleen cysts aged 6 to 17 years were treated at the Tver Children's Regional Clinical Hospital. There were 14 boys (54%), 12 girls (46%). Cystic spleen damage was most often asymptomatic and was detected by ultrasound of the abdominal cavity and retroperitoneal space for other diseases. Clinical symptoms were manifested in only 8 (31%) patients in the form of pain in the left hypochondrium, which was dragging in its nature. In the anamnesis, only 1 child had spleen damage, treated conservatively, after which a large post-traumatic cyst was formed. On palpation of the abdomen in 2 patients, a tumor-like formation emanating from the left hypochondrium, painless, sedentary, densely elastic consistency was determined. Splenomegaly was detected in three patients. The main diagnostic methods were ultrasound, CT and MRI of the spleen.

In all cases, the diagnosis was made using ultrasound. The localization of the cyst in the upper pole of the spleen predominated, in 17 (65%) cases, in 3 (12%) children the cyst was found in the area of the gate of the spleen, and in 6 (23%) patients in the lower pole. The diameter of the cysts varied from 13 to 150 mm. In 24 (92%) patients, cysts are represented by a single-chamber formation, in 2 (8%) cases with multiple septa. Laparoscopic fenestration was performed in 19 (72%) patients. Laparoports with a diameter of 5 mm with manipulators were installed in the right hypochondrium and left mesogastric regions. Sometimes the installation of a third manipulation laparoport in the epigastric region was required. Visualization was carried out through the umbilical region using a 5 mm telescope (Karl Storz). In all cases, the cyst membranes were excised with ultrasonic scissors along the border with the parenchyma and the maximum destruction of the inner lining by argon plasma coagulation was performed. Additionally, the residual cavity was plugged with a lock of the omentum and a safety drainage to the spleen was installed.

Puncture-sclerosing interventions were performed in 4 (16%) children. Using ultrasound navigation (MySono U6-RUS SAMSUNG MEDISON) the puncture system (Teleflex) No. 8 and a conductor were set up at the site of the smallest thickness of the spleen parenchyma. Drainage was established through this conductor into the cavity, the contents of the cyst were evacuated, and sclerosant was administered. Then, a sclerosant (alcohol 96%) was introduced into the cyst cavity. 3 (12%) children did not undergo surgical treatment due to the small diameter of the spleen cyst.

RESULTS

Our analysis of the treatment results showed that laparoscopic fenestration was successful in 17 (68%), and in one (4%) patient there was a relapse. We believe that relapse occurred because tamponade of the residual cavity with the omentum was not performed in this case. After 6 months, the child was successfully operated on — laparoscopic fenestration was performed with fixation of the omentum in the residual cavity. We believe that these measures are necessary, since tamponing the residual cavity with an omentum strand performs a drainage function, and the established safety drainage is an indicator of delayed intra-abdominal bleeding. After puncture-sclerosing intervention in one (4%) child, relapse was recorded twice. During laparoscopic fenestration, in one (4%) case there was spleen damage, complicated by massive bleeding, which required conversion and splenectomy. There were no fatal outcomes. In two (8%) children with relapse, histological examination revealed cystic capillary lymphangioma (coarse fibrous tissue with hyalinosis, focal lymphoid infiltration with single eosinophils; a large number of closely adjacent erythrocyte capillary vessels was determined in one of the sites; on the inner surface of the capsule endothelial lining preserved in places). In other cases, a histological examination revealed a true spleen cyst.

CONCLUSIONS

Nonparasitic spleen cysts are a rare pathology in children, which requires an individual approach when choosing treatment tactics. To minimize surgical invasion, spleen-preserving interventions should be used, which are associated with the obligatory destruction of the inner lining of the cyst, which reduces the risk of recurrence. The operation of choice is laparoscopic fenestration, and in case of recurrence, it is possible to use endovascular occlusion of the vascular pools of cystic formations.

REFERENCES

- 1 Primary Vascular Neoplasms of the Spleen / R. V. Abbott, A. D. Levy, N. S. Aguilera [et al.] // *Radiologic-Pathologic Correlation*. 2004 (24) P. 1137–1163.
- 2 RUMYANTSEVA G.N., VOLKOV S.I., YUSUFOV A.A.2, KAZAKOV ALEXANDER N. [ET AL.]. Successful treatment of injured spleen complicated by a giant post-traumatic cyst // *Pediatric Surgery*, 2019 (4): 211–214
- 3 YANO H., IMASATO M., MONDE T. ET AL. Hand-assisted laparoscopic splenectomy for splenic vascular tumors: report of two cases. *Surg. Laparosc. Percutan. Tech.* 2003;13(4)286–9.
- 4 WEINRICH M., DAHMEN R.P., BLACK K.J. [ET AL.]. Postoperative long-term results in high-grade traumatic ruptures of the spleen in children // *Zentralbl. Chir.* 2014. Vol. 139, No. 6. P. 632–637. DOI: 10.1055/s-0032-1328216
- 5 ONG A.W., EILERTSON K.E., REILLY E.F. [ET AL.]. Nonoperative management of splenic injuries: significance of age // *J. Surg. Res.* 2016. Vol. 201, No. 1. P. 134–140. DOI: 10.1016/j.jss.2015.10.014
- 6 BELYAEVA O. A., KONDRASHIN S. A., POLYAEV YU. A., GARBUZOV R. V., MUSAEV G. H., BONDAR Z. M., BELYAEVA, A. V., SHIRYAEV A. A. Combined navigation of surgical intervention in children with solitary cysts of the spleen. *The Russian Bulletin of pediatric surgery, anesthesiology and critical care medicine.* 2016; IV(1): 16–23.
- 7 OGNEV S. I., TSAP N.A. Endovideosurgery cysts of parenchymal organs of the abdominal cavity // *The Russian Bulletin of pediatric surgery, anesthesiology and critical care medicine.* 2012. II. (1): 44–48.
- 8 FISHER J. C., GURUNG B., COWLES R. A. Recurrence after laparoscopic excision of nonparasitic splenic cysts // *J. Pediatr.Surg.* 2008. Vol. 43. No. 9. P. 1644–1648.
- 9 MORANDI E., CASTOLDI M., MERLINI D. A., ET AL. Is there a role of percutaneous drainage in non-parasitic splenic cysts? Case report // *Il Giornale di Chirurgia – Journal of Surgery.* 2012. Vol. 33. No. 10. P. 343–345.