Complications of Hydrocele and Results of Hydrocelectomy in Children More Than 2 Years of Age

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Objective: *The current standard treatment of hydrocele is ligation of processus vaginalis and removal of fluid in hydrocele at the age of 1-2 years old. However, there were some studies reported the possibility of surgery beyond 2 years old*
Material and Method: *Retrospective study of patients diagnosed as hydrocele and operated during January 2010 to December 2015. The data collected were age at presentation, age at operation, symptoms and signs, associated disease, type of hydrocele, follow-up time before operation, type of operation, duration of operation, and post-operative complication.*
Results: *There were 34 patients. The average age at the time of presentation was 45.03 months and the average age at the time of operation was 48.39 months. The most common presenting symptom was scrotal swelling and transillumination of the scrotum was the most common physical sign. There was 1 postoperative complication from wound hematoma and scrotal swelling.*
Conclusion: *Conservative treatment of hydrocele after 2 years had no serious complication. Operation for hydrocele had some post-operative complications. Waiting more than 2 years may be possible for the patients not comfortable for operation in the standard time.*

Keywords: *Hydrocele age more than 2 years complications*

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During weeks 27 to 28, the testicle gubernaculum, and proces susvaginalis descend through the inguinal canal into the scrotum[1,2]. Normal fusion of the processus occurs spontaneously after the testicle is in place[3]. Hydrocele results from failure of the obliteration of the proces susvaginalis. The study of Rowe et al suggested that 60% of patent processusvaginalis close spontaneously within the first 2 years[10]. The current standard treatment of hydrocele is the ligation of processusvaginalis and removal of fluid in hydrocele at the age of 1 to 2 years old[4,5]. However, there were some studies reported the possibility of surgery beyond 2 years old[4,6,14]. The author reviewed the natural history, complication for observation and results of operations of the patients with hydrocele operated at the age more than 2 years old.

Material and Method

Retrospective study of patients diagnosed as hydrocele and operated during January 2010 to December 2015 by the author as a single surgeon. The parameters collected were age at presentation, age at operation, symptoms and signs (mass or scrotal swelling, progression in size, changing in size at different positions, redness, pain, and transillumination test), associated disease, type of hydrocele, follow-up time before operation, type of operation, duration of operation, and post-operative complication.

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Results

There were 34 patients aged more than 2 years at the time of operation. Medical record was incomplete in 1 patient and was removed from the study. The average age at the time of presentation was 45.03±34.38 (min-max; 3 to 169) months and the average age at the time of operation was 48.39±34.14 (min-max; 25 to 177) months. The follow-up time before the operation was 3.55±5.61 (min-max; 0 to 29) months. The most common presenting symptom was scrotal swelling and transillumination of the scrotum was the most common physical sign. The average duration of the presenting symptom was 22.24±33.08 (min-max; 0 to 152) months with 6 patients having symptoms since birth. The average size of scrotal mass was 3.68±3.4 (min-max; 2 to 15) cm. If one patient with a large (15 cm)

scrotal mass was excluded, the average size would be 2.81±1.01 cm. The hydroceles were on the right side, left side, and bilateral in 19, 13, and 1 respectively. Only 3 patients had none communicating hydrocele. The details of clinical signs and symptoms were presented in the table below Table 1.

Associated disease found in 5 patients; prematurity, chronic renal failure post kidney transplantation and graft rejection, hypospadias, undescended testis, and phimosis. No scrotal infection, testicular atrophy, or inguinal hernia seen. High ligation of the patent processusvaginalis and hydrocelectomy were performed in 31 patients. The other two patients received the hydrocele operation with circumcision and herniorrhaphy (for prevention due to ascites). The average time of operation was 56.94±18.63 minutes. There was 1 postoperative complication from wound hematoma and scrotal swelling which was completely resolved after 3 months.

Table 1. Symptom and sign of hydrocele

Symptom and sign (n = 33)	Number	Percent
Scrotal swelling	19	57.57
Change size by position	11	33.33
Scrotal mass	10	30.3
Increasing scrotal size	9	27.27
Minor pain	4	12.12
Accidental found by doctor	4	12.12
Positive transillumination test	33	100

Discussion

In the study, the average age of the patients at presentation was 45.03±34.38 months. The presenting symptom was scrotal swelling (57.58%), changing in size of scrotal swelling or scrotal mass (33.33%), scrotal mass (30.3%), and increasing in size of scrotal swelling or scrotal mass (27.27%). Minor scrotal pain was found in minority of the patients (12.12%). Concerning about serious complications during follow-up of patients with hydrocele especially inguinal hernia, as mentioned in other studies[4,6], the presented study had no inguinal hernia, testicular atrophy or scrotal infection developed during pre-operative follow-up period and had no other serious perioperative complications.

Hydrocele was found on the right side, left side and bilateral in 19, 13, and 1 patient respectively. The right to left ratio was 1.46:1. This ratio was lower than previous studies from western countries but comparable to the studies from Asian population; 1.4 to 1.6:1[7,8]. The findings may emphasize the less laterality in Asian population.

According to the study of the American Academy of Paediatrics section on hernia surgery survey revisited, 42% of surgeons performed reparation if the hydrocele was still present at 1 year of age, whereas 46% of surgeons (66% in the year 1993) operated electively as hernia repair in cases of communicating hydrocele despite the absence of any definite physical examination findings of hernia[3,9]. The study had only 3 patients with non-communicating hydrocele. The presented findings showed a higher incidence of communicating hydrocele in children more than 2 years of age or implied more incidence of resolution of non-communicating hydrocele. However, the history of changing in size at different positions was not exclusively reliable in the diagnosis of communicating hydrocele. In the presented study, 15 patients had discordance between history of examination and the type of hydrocele. The findings corresponded with the study of Koski et al which demonstrated little influence of the parent's history of communication and fluctuation in size on the treatment of communicating hydrocele[6].

The operation performed was ligation of the patent processusvaginalis and create a window in the hydrocele sac. This may cause bleeding from the cut hydrocele sac. The author had 1 patient with post-operative bleeding that manifested with ecchymosis and scrotal swelling. However it was treated conservatively and resolved in 3 months. The presented study had no other complications namely wound infection, vas deference injury, or recurrence of hydroceleas reported by other studies[11-13].

The recommended timing for surgical treatment of hydrocele is 1 to 2 years old. However, waiting until 4 years old could gain advantage for some patients who eventually had resolution of hydrocele without any serious complication avoiding the operation[4,6,14]. Less number of operation will cause less complication. Anaesthesia and surgery in older children are safer than the younger and smaller ones. The presented study also showed no serious complication for children with hydrocele at the ages ranging from 22 to 177 months (average 48.39 months).

Conclusion

From the presented study, conservative treatment of hydrocele after 2 years had no serious complication. Operation for hydrocele had some post-operative complications. Waiting more than 2 years

may be possible for the patients not comfortable for operation in the standard time (1 to 2 year of age).

What is already known on this topic?

Standard treatment of hydrocele is observation until 2 years old. Unresolved hydrocele is candidate for hydrocelectomy.

What this study adds?

Observation of hydrocele beyond 2 years old has no serious complication and may be suitable for the patients not comfortable for operation at 2 years of age.

Potential conflicts of interest

None.

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ภาวะแทรกซ้อนและผลการรักษาถุงน้ำในอัณฑะในผู้ป่วยเด็กอายุมากกว่า 2 ปี

อัครพล มุ่งนิรันดร์

วัตถุประสงค์: การรักษามาตรฐานของถุงน้ำในอัณฑะคือผูกท่อโปรเซสซัส (processusvaginalis) และนำน้ำจากถุงน้ำในอัณฑะด้านล่างออกในช่วงอายุ 1-2 ควบอย่างไรก็ตามมีรายงานว่าสามารถผ่าตัดถุงน้ำในอัณฑะในช่วงอายุมากกว่า 2 ขวบได้ผู้นิพนธ์จึงได้รวบรวมข้อมูลในเด็กที่มีอายุมากกว่า 2 ขวบ เพื่อดูการดำเนินโรคภาวะแทรกซ้อนจากการรอดูอาการและผลการผ่าตัดที่ผู้นิพนธ์ได้ทำ

วัสดุและวิธีการ: รวบรวมข้อมูลย้อนหลังตั้งแต่ปี พ.ศ. 2553 ถึง 2558 ข้อมูลที่รวบรวมได้แก่อายุวันที่มาพบศัลยแพทย์ อายุ ณ วันผ่าตัดอาการและอาการแสดงโรคร่วมชนิดของถุงน้ำในอัณฑะระยะเวลาที่ติดตามอาการก่อนผ่าตัด ชนิดของการผ่าตัดระยะเวลาการผ่าตัดและภาวะแทรกซ้อนหลังผ่าตัด

ผลการศึกษา: รวบรวมข้อมูลผู้ป่วย 33 คนมีอายุเฉลี่ย 48.39 เดือน ณ. วันผ่าตัดและมีระยะเวลาติดตามอาการก่อนผ่าตัด 3.55 เดือนอาการของคนไข้ที่พบมากที่สุดคืออัณฑะบวมและอาการแสดงที่พบบ่อยสุดคือ แพทย์พบถุงอัณฑะเรืองแสงเมื่อส่องไฟ (positive transillumination test) ระยะเวลาเฉลี่ยของอาการของผู้ป่วยคือ 22.24 เดือนขนาดเส้นผ่านศูนย์กลางโดยเฉลี่ยของถุงน้ำคือ 3.68 เซนติเมตรผู้ป่วยเป็นถุงน้ำในอัณฑะข้างขวาซ้าย และทั้งสองข้างคิดเป็นอัตราส่วน 19:13:1 เวลาเฉลี่ยในการผ่าตัดคือ 56.94 นาทีมีภาวะแทรกซ้อนหลังผ่าตัด 1 คน คือเลือดคั่งในแผลและอัณฑะบวม

สรุป: ไม่พบภาวะแทรกซ้อนที่เป็นอันตรายในเด็กที่มีถุงน้ำในอัณฑะที่มีอายุมากกว่า 2 ขวบการผ่าตัดถุงน้ำในอัณฑะ สามารถมีภาวะแทรกซ้อนได้มีความเป็นไปได้ในการรอผ่าตัดถุงน้ำในอัณฑะแม้เด็กจะอายุมากกว่า 2 ขวบ ถ้าเด็กที่ยังไม่พร้อมโดยอาจมีเด็กบางคนหายจากภาวะถุงน้ำในอัณฑะในช่วงที่รอดูอาการ