

POPLITEAL CYSTS IN CHILDREN : A RETROSPECTIVE STUDY OF 62 CASES

I. DE GREEF¹, G. MOLENAERS¹, G. FABRY¹

Popliteal cysts in children are usually asymptomatic and are usually found fortuitously by the parents. This study presents a series of 62 children with popliteal cysts. Among the 51 patients who received no treatment, the cysts had already disappeared at the time of the study in 43 patients ; the remaining 8 patients are under 14 years of age and are without complaints. This study confirms the hypothesis that the primary popliteal cyst in children usually disappears before the age of 18. Surgery presents unnecessary risks for the patient ; moreover, the chance of recurrence after surgery is real.

Keywords : popliteal cyst ; child.

Mots-clés : kyste poplité ; enfant.

INTRODUCTION

Popliteal cysts or Baker cysts in children are usually found fortuitously by the parents. The child has no complaints in most cases, and it is parental worry that leads to a medical visit. The purpose of this study is to show that a common popliteal cyst has a tendency to spontaneously disappear. A surgical intervention is totally unnecessary in asymptomatic cases ; furthermore, this treatment results in a high percentage of recurrence (2).

MATERIALS AND METHODS

The records of 75 children with popliteal cysts were reviewed retrospectively. The children were seen in the outpatient clinic of the orthopedic department of the University Hospital Pellenberg between 1985 and 1995.

There were 47 boys and 28 girls with a mean age of 6.5 years. The age range was between 2 and 12 years. In 6 children a bilateral popliteal cyst was found. The patients or the parents were contacted by telephone and asked if they would fill out a questionnaire.

Thirteen patients could not be located, so that 62 patients remained in the study. They all filled out the questionnaire.

The following questions were asked :

1. Is the cyst still present ?
2. If so, how large is it, are there any changes in volume or pressure and are there any complaints ?
3. If the cyst has disappeared, when did it disappear and are there any other complaints in the knee ?
4. Has any other treatment been given outside the University Hospital ? If so, what treatment ?

The 62 patients were divided into 3 groups. The first group consisted of 53 patients. These patients were initially seen at the University Hospitals, without prior treatment. After physical examination, only observation was proposed without any form of treatment. Four of these patients presented with a bilateral cyst and in one patient a contralateral cyst was detected 6 years after the first visit. One patient was treated with 3 weeks of cast immobilization because of pain. In another patient, with trauma and swelling of the knee one month prior to the visit, a knee aspiration was performed.

Group 2 consisted of 3 patients. They underwent several aspirations of their cyst prior to the first visit to our department. No further treatment was instituted.

Group 3 consisted of 6 patients. They visited our department because of recurrence of a popliteal cyst after surgical resection in another hospital. In 5 patients no further treatment was proposed. In 1 patient a second resection of the cyst was performed after knee arthroscopy.

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RESULTS

In the first group of 53 patients, 52 consulted because of parental concern over popliteal swelling. In 11 cases there was an outright fear of a neoplastic process. One patient only consulted because of spontaneous pain in the popliteal fossa, increasing with deep palpation. The cyst was not clinically visible and could only be detected by sonogram. Eight patients described a vague discomfort in the popliteal fossa, increasing with sports activities (6 patients were members of a swimming club). One patient presented with trauma one month before the clinic visit.

Of the 51 patients (with 56 cysts) without any form of treatment, the cyst had disappeared in 43 patients (84%) without any remaining complaints. The cysts disappeared after an average time of 1 year, 11 months (from 3 weeks to 7 years) and at an average age of 8 years 6 months (from 3 to 17 years) (Fig. 1). The 4 bilateral cysts disappeared approximately at the same time. The contralateral cyst detected 6 years after the first cyst at the age of 12 years, disappeared spontaneously after 3 years.

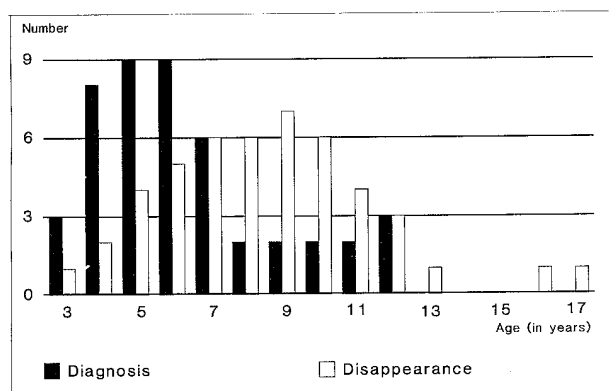


Fig. 1. — Age at time of diagnosis and disappearance of the cyst in 43 patients of group 1.

In 8 patients (16%) the cyst was still present. In 2 of them the cyst had remained unchanged; 1 patient had minor complaints in the popliteal fossa after kneeling. In the other 6 patients the

volume of the cyst had significantly decreased, and there were no complaints. The follow-up period in the 8 patients was 1 to 8 years, and the age at the time of follow-up ranged between 8 and 14 years. In the one patient treated with a cast, the cyst had disappeared after immobilization.

In the patient in whom aspiration was performed after trauma, the cyst recurred after a few weeks, and the patient presented with pain after extended standing or walking. Nine months after aspiration, the patient returned to the clinic after acute pain in the calf, caused by rupture of the cyst. Arthrography of the knee disclosed no abnormality; the cyst was resected, and 8 months later there was no recurrence.

In the second group of 3 patients with regular aspirations of the cyst prior to their first visit, the cysts disappeared after an average time of 1 year 8 months at an age of 7 to 10 years. Two patients were symptom-free before the aspiration; one complained of pressure in the popliteal fossa.

Of the third group of 6 patients in whom a surgical resection was performed, 4 patients were symptom-free before the operation. In one patient the cyst was resected because of a rupture resembling a deep venous thrombosis. One patient presented preoperatively with rather severe pain at the site of the cyst and lateral to the knee joint. A discoid lateral meniscus was suspected. In 3 of the 6 patients with a recurrent cyst the latter disappeared after respectively 2 months, 1.5 years, and 5 years at an average age of 8 years. There were no remaining complaints in 2 of these patients; the third patient presented at the age of 15 years with a large keloid scar 20 cm in length and 1 cm in width. In one of these 3 patients a contralateral cyst was detected, which disappeared after 1 year. In 2 of the 6 patients the cyst was still present after 3 and 5 years, at the age of 8 and 12 years, respectively. The volume however had decreased significantly, and there were no complaints. In the last patient, who underwent a second resection, an arthroscopy showed a discoid lateral meniscus which was remodelled at the same time. Nine years after the second resection no recurrence of the cyst had occurred and the patient was symptom-free.

DISCUSSION

The term "popliteal cyst" has many synonyms : Baker's cyst, posterior herniation of the knee joint, synovial cyst, semimembranosus bursa, gastrocnemius-semimembranosus (G-SM) bursa. The term "popliteal cyst" probably is the best description of the condition. The often-used term "Baker cyst" is historical : Baker described the popliteal cyst, but always associated with tuberculosis or Charcot joints (12).

Popliteal cysts are almost always found in the posteromedial region of the popliteal fossa between the medial head of the gastrocnemius muscle and the semimembranosus tendon. They typically arise from the G-SM bursa, closely associated with the popliteal tendon, and they can follow this bursa very distally into the calf (3, 9, 12).

There are different theories concerning the causal mechanism of the popliteal cysts. Lindgren and Willen (5) described 3 hypotheses in 1977. First they described a herniation of the synovial membrane of the knee, secondary to a weak zone in the posterior aspect of the knee joint. A second possibility was a rupture of the posterior capsule of the knee whereby an outflow of synovial fluid was made possible, later followed by encapsulation. A third theory described a rupture of the capsule together with a communication between the G-SM bursa and the knee joint, whereby an outflow of synovial fluid to the bursa was made possible. Lindgren and Willen considered the third theory as the most probable. The exact mechanism however remained an open question, and therefore Lindgren and Willen called them "primary cysts" as did Limon (4) who discussed "kystes idiopathiques" (idiopathic cysts). According to Gristina and Wilson (3) primary minor direct trauma to the GSM bursa causes distension of the bursa, and as a consequence the development of a popliteal cyst. This trauma can be caused by rubbing of the bursa between the two muscles. It can also arise from direct external trauma to the popliteal fossa, when children wiggle their legs with the popliteal region of the knee pressed against the edge of a high chair. In this case it more closely resembles bursitis, and it has also been shown in the study of Massari *et al.* (7) that

a direct communication between the bursa and the knee joint is much rarer in children than in adults.

In children, there is usually no underlying knee pathology as a cause of the cyst. The cystic fluid is dense, gelatinous, viscous and mucoid.

The attitude towards synovial cysts in our department has been very conservative in the last 15 years. The follow-up interview in this study was made mainly by telephone, and the clinical evaluation by the parents or the child. There was no formal exam or sonographic evaluation to prove that the cyst had indeed disappeared. We think however that this does not influence or detract from our results, since if a cyst has become so small that it cannot be seen or felt and if it does not cause complaints, we think it is appropriate to suppose that the cyst has disappeared, or at least that it has no further clinical implications. This study therefore confirms the opinion that primary synovial cysts in children have a tendency to disappear before the age of 18 years. We found no relation between the age of detection of the cyst and the time it took to disappear. We could not compare directly with a series that was surgically treated, but a study of Dinham in 1975 (2) showed a recurrence rate of 42% after primary surgical resection. He also showed a spontaneous disappearance of the cysts in 73% of cases after an average period of 1 year 10 months. Therefore, a first aspect of therapy is to reassure the parents, who are mainly concerned because of the swelling posterior to the knee joint. Clinical exam should however exclude all other pathology. Some disorders of the knee can indeed be the cause of a popliteal cyst, and some cysts can cause intermittent swelling of the knee (11). When there are complaints of pain, some restriction of activities should be recommended. Some authors combine this with a period of anti-inflammatory drugs or aspiration of the cyst when there is an increase in volume with persistent pain. One may also inject the cyst with fibrin sealant or corticosteroids (4, 7, 8). If after these conservative measures the patient is still not symptom-free, an underlying pathology should be suspected. The only known complication of a popliteal cyst is spontaneous rupture. The patient presents with severe pain in

the calf and a syndrome resembling deep venous thrombosis (6).

CONCLUSION

We formally believe that asymptomatic synovial cysts in children should not be treated. There is not only a high recurrence rate after surgical resection, but also the possibility of keloid formation. The need for hospitalization of the child and the anesthetic risks should also be considered.

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SAMENVATTING

I. DE GREEF, G. MOLENAERS, G. FABRY. Kniekuilcyste bij het kind : een retrospectieve studie van 62 gevallen.

Kniekuilcysten bij kinderen zijn gewoonlijk asymptomatisch en toevallige vondsten van de ouders. In deze studie wordt een reeks van 62 kinderen retrospectief nagegaan. Bij 43 van de 51 kinderen zonder enige behandeling, was de cyste reeds spontaan verdwenen, de overige acht patiënten zijn jonger dan 14 jaar en klachtenvrij. De studie bevestigt de hypothese dat de primaire kniekuilcyste bij kinderen normaal vóór de leeftijd van 18 jaar verdwijnt.

Heelkundige resectie geeft onnodige risico's en lasten voor de patiënt, bovendien is de kans op recidief reëel.

RÉSUMÉ

I. DE GREEF, G. MOLENAERS, G. FABRY. Le kyste poplité chez l'enfant : étude rétrospective de 62 cas.

Les kystes poplités chez l'enfant sont normalement asymptomatiques et sont repérés fortuitement par les parents. Cette étude a porté sur une série de 62 enfants. Dans 43 cas sur 51 sans traitement, les kystes avaient déjà disparu au moment de l'étude, les 8 autres patients ont moins de 14 ans et ne présentent pas de symptômes. Cette étude confirme l'hypothèse que le kyste poplité idiopathique chez l'enfant, disparaît avant l'âge de 18 ans.

Une résection chirurgicale présente des risques inutiles et expose à un risque important de récurrence.