Controversy about reversibility of cysts in cystic cystitis in children

Kontorwersje dotyczące ustępowania cyst w cystowatym zapaleniu pęcherza u dzieci

Most cystic cystitis cases in children exhibit cysts for an extended period, even after successful treatment of the underlying infection. Not much is known about the dynamics of cyst appearance and disappearance. In long-term follow-up some clinicians suggest complete eradication of the cysts. Contrary, histological studies describe the cystic cystitis as an irreversible process in von Brunn’s nests. The endoscopic differentiation from reversible follicular cystitis is hard and uncertain. A group of 21 children with cystic cystitis was diagnosed and staged in a 10-year period. All of them clinically presented with recurrent uroinfections. We examined cystoscopic changes of cystic cystitis before and during the treatment of urinary infection to find objective signs of improvement in endoscopic findings after prolonged antibiotic therapy. Control cystoscopy was performed after a period of six infection-free months. In the average period of 20 months after the beginning of treatment there were no changes in cystic cystitis stage. The examined period seems to be too short for the changes of cystic cystitis to disappear. It is unclear if prolonged antibacterial treatment bears any influence on the number of cysts.


Introduction

Cystic cystitis is a common cystoscopic finding in children. Recurrent urinary tract infection and the accompanying inflammation have been considered as a major role in the occurrence of cysts [2,7,13]. The process is placed at the urinary bladder mucosa in the so called von Brunn’s nests, which are proliferative or reactive changes that can be seen along the entire urothelial tract [6,10]. The cysts develop from invaginations of the surface urothelium into the underlying lamina propria that lose continuity with the surface and become cystic due to accumulation of cellular debris or mucus [9]. Patients with cystic cystitis were described as a hard-core group requiring long-term treatment and follow up [1,3,8].

Other studies describe cystic cystitis as the appearance of von Brunn’s cysts without concomitant inflammation. It can be found in up to 60% of the general population, as an irreversible process which is asymptomatic in the absence of underlying disease. Von Brunn’s nests have been found in 86% to 94% of autopsies [5,6,10,14].

In clinical practice, most cystic cystitis cases in children exhibit cysts for an extended period, even after successful treatment of the underlying infection. Treatment of such patients is no longer planned on the basis of cystoscopic findings. Infection recurrence rate and underlying voiding disorder are the leading criteria in treatment [8,11]. Some pediatricians choose to administer prolonged antibacterial treatment in order to eradicate the cysts. It is unclear if such practice bears any influence on the
course of the disease.

We examined cystoscopic changes of cystic cystitis before and during the treatment of urinary infection. Our intent was to find objective signs of improvement in endoscopic findings after prolonged antibiotic therapy.

Patients and methods

A group of 21 children with cystic cystitis was treat- ed in a 10-year period at the Clinical Hospital Split, Croatia. All of them clinically presented with recurrent urinoinfections (>10^5 bacteria per ml of urine), most of which were associated with vesicoureteral reflux (14 cases). There were 6 cases associated with other diseases of the urinary tract (megareter, hydronephrosis, urinary tract duplication, diverticule of the urinary bladder) and isolated cystic cystitis was noted in one case. The underlying diseases were treated conservatively or/and operatively according to their respective diagnosis.

The antibiotic treatment was administered follow- ing bacterial culture results. The treatment lasted from 6 to 30 months. Patients with persistent bacteriuria due to underlying disease complications were not included in this study.

All cases were diagnosed and staged by cystosco- py. The diagnosis of cystic cystitis was established in cases with semispherical, pearl like mucosal cysts. The patients were staged in three groups depending on the number of cysts: mild (<5 cysts), moderate (5-10 cysts) and severe (>10 cysts). Other findings associated with acute or chronic inflammation (mucosal hyperemia and edema, thickened bladder wall, trabeculation, changes of ureteral orifices, etc.) were not considered in this study.

Control cystoscopy was performed after a period of six infection-free months. Care was taken to avoid performing cystoscopy at the end of chemophylaxis to make recurrence less possible. The criteria for endo- scopic improvement were a reduced number of cysts and consequently lower stage of the disease or normal finding. The results are presented and discussed.

Results

The timing of control cystoscopy is shown in Table I. The minimum period was 12 months and the average period was 20 months after the first cystoscopy.

The first and the control cystoscopic findings are shown in Table II. There were no changes in cystic cystitis stage in the follow up period. The findings were the same for all examined groups and for each case itself. There was no definite sign that any of the originally encountered cysts had disappear- ed.

During the antibacterial treatment there were 14 cases with temporary existing bac- teriuria (significant or non-significant) and 7 cases with permanently sterile urine.

Discussion

In all our patients the treatment period of up to two years proved sufficient to achieve urinary infection control in the form of at least six months infection free period. The same period was obviously too short for the changes of cystic cystitis to dis- appear. Neither mild cases with urine sterile from the beginning of treatment nor the long- est treated case in which the control cystoscopy was performed after 30 months showed any improvement. Vuckov et al. [13] noted that most of their patients had been medically treated up to one year and some of them more than five years before urinary tract infection was eradicated and nodular mucosal changes disappeared. If the cysts are reversible then they appear with the in- fection (or other chronic stimulus) and dis- appear when it is cured [4]. Not much is known about the dynamics of cyst appearance and disappearance. Results of our study show that the infection and the uri- nary bladder lesions did not disappear propor- tionally. They also raise questions on whether the cysts are reversible, as claimed by some authors [7,8,13].

Chronic irritation of bladder mucosa can result in several kinds of pathological reac- tions [12]. Many clinicians still consider in- flammation to be the main pathological pro- cess responsible for cystic cystitis [2,7,13]. According to recent histological studies, inflam- mation is not as common in cystic cystitis as previously thought and it is seen only with concomitant bacteriuria [4]. In most cases, the cysts represent Brunn's nests, a variant of normal urothelium which is asymp- tomatic and irreversible [10,14]. The confu- sion between pathological and clinical terms of the disease may particularly be respon- sible for that controversy. Most of the cases clinically termed as cystic cystitis are histo- logically classified as either follicular or poly- poid cysts [4,11], which is essentially an inflammatory reaction of bladder mucosa due to chronic irritation [12]. On histology it presents as lymphoid follicles in an edema- tous lamina propria [4] without true epithel- ium cyst formation, whereas true cystic cystitis in histological terms represents cystic degeneration of von Brunn's urothelial nests. Cystic appearance of follicular cystitis on cystoscopy can be expected to disappear after successful treatment, while von Brunn's nests in cystitis cystica can not. The reported controversy in clinical outcome may be the result of two pathological entities being joined under one clinical diagnosis. Some patients are misdiagnosed as cystic instead of follicular cystitis, et vice versa, while hav- ing a different clinical and pathological out- come. It could be the answer why some authors note the disappearance of the cysts and some do not. Morphological changes in these two entities should be distinguished, and endoscopic differentiation can hardly be done. It requires biopsy and histological confirmation, which is usually not performed in children. In the lack of histological confir- mation, it is better to avoid using cystic cystitis as a clinical term.

The role of infection in the development of cysts in true cystic cystitis should prima- rily be viewed as a source of chronic irrita- tion. The absence of infection probably stops the development of new cysts but due to their degenerative nature, they can hardly be expected to disappear following successful antibiotic treatment. Antibiotics should be administered to cure the urinary infection, not the cysts themselves.

Conclusions

The examined period seems to be too short for the changes of cystic cystitis to dis- appear. It is unclear if prolonged antibacte- rial treatment bears any influence on the number of cysts.

References