CASE REPORT

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A rare case of neurologic bladder presenting with infected urachal cyst

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Abstract

Embryologically, the urachus is the tubular structure that connects the dome of the bladder to the umbilicus. Urachal anomalies are rare, representing an arrest in its normal process. A high index of clinical suspicion, and appropriate radiologic investigation are required to recognize and treat this problem. Incomplete obliteration of the urachal lumen results in several anomalies. The most common urachal abnormality is the urachal cyst. Most cysts develop in the lower one third of the urachus. urinary infection (UTI) should always be excluded in the workup of suspected infected urachal cyst. We report the case of a 15-months –old girl with past history partially treated UTI (for 1 months ago) & back ground neurogenic bladder presented by umbilical erythema & urachal mass that lead to surgical intervention due mechanical pressure of abscess to ureter (mild to moderate hydrouretronephrosis). she has no urination at admission time. This patient was managed by complete excision of the urachal remnant & botulism injection because of neurogenic bladder and then vesicostomy catheter be inserted. Upon improvement of her clinical condition, she was discharged with oral antibiotic prophylaxis which was continued. After 2 months' fallow-up, the child now has a normal renal function.

Keywords: Urachal cyst; Urachal abscess, Umbilical erythema, Neurogenic bladder

INTRODUCTION

The urachus is an embryonic tubular structure that connects the bladder to the umbilicus. The lumen of the normal urachus becomes obliterated or completely collapsed [1].

Incomplete obliteration of the urachal lumen results in the following four anomalies: congenital patent urachus; umbilical urachal sinus; vesicourachal diverticulum; and the most common of which is the urachal cyst.

These children may present at birth with a giant umbilical cord. Older children generally present with a persistently wet or draining umbilicus, and occasionally with a urinary tract infection. Unlike other urachal abnormalities, urachal cyst generally remains small and are silent, and only in one third of patients is it discovered in infancy or childhood [2].

the initial presentation of a urachal anomaly may include mild periumbilical erythema, umbilical discharge of urine or pus, urologic complaints consistent with a urinary tract infection, symptoms suggestive of an acute surgical abdomen, or a midline mass [3].

If the cyst remains uninfected or does not enlarge to a size causing mechanical symptoms, it usually remains undetected.

Hematogenous or lymphatic spread is the usual proposed routes of infection into cyst. Direct extension from the umbilicus or bladder can also occur. For this reason, urinary infection (UTI) should always be excluded in the workup of suspected urachal abscess [4].

The unique confinement of the urachus to the space of Retzius generally keeps the infection localized to the anterior abdominal wall.

However, an infected cyst left untreated will most commonly drain either to the umbilicus or into the bladder, since these are the two weakest sites in the urachal canal.

The diagnosis can usually be made by a combination of urinalysis and culture and radiological investigation.

Ultrasound examination and computed tomographic scan of the lower abdomen can be useful for diagnosing urachal cysts, especially for showing the relationship between the urachus and the bladder or umbilicus [1].

Both modalities can show an inflammatory process in the anterior abdominal wall. Complete excision of a retained urachus is important to prevent the development of any malignant change (urachal remnants to adenocarcinoma or sarcoma) has been reported in later life [5].

CASE REPORT

A 15 months-old girl was admitted to our hospital with a 30- day history of fever& periumbilical erythema. In past history she hospitalized for 3 days in a month ago for upper urinary tract infection and then discharge without complete treatment. In the same time, she has a voiding cystourethrogram that suggest neurogenic bladder (Christmas tree sign) (Fig. 2). A postoperative cystoscopy showed normal bladder urothelium and an extrinsic mass impinging on the posterior aspect of the bladder dome.

Her temperature was 39.1°C and her blood pressure 100/50 mmHg.

The initial Abdominal examination revealed mild distension of the lower abdomen with tenderness. There was erythema around the umbilicus but no purulent discharge.

A complete blood cell count showed hemoglobin of 7.6 g/dl, hematocrit of 23.9%, The white-cell count was elevated 47050/mm3, with a large proportion of neutrophils and a platelet count of 805000 /mm3. C- reactive protein was elevated at 165 mg/dl & ESR 110 mm/h. she has metabolic acidosis, hyperkalemia, uric acid 7.4 mg /dl, Cr 1mg/dl, bun 22mg/dl. In U/A was seen microscopic hematuria & positive leukocyte esterase.

Blood culture was negative but urine culture was positive with pseudomonas aeruginosa. The remaining laboratory findings were within normal limits.

An ultrasonography revealed turbid fluid mass with septa in behind of bladder& mild reactive fluid in the abdominal cavity. Computed tomographic Scan with contrast revealed a thick-walled cystic mass superior to the dome of the bladder diffusely contiguous with the anterior abdominal wall (Fig. 1). There was no free peritoneal fluid in the abdomen. It was necessary to drain the abscess under appropriate antibiotic coverage, then excise the urachal tract.

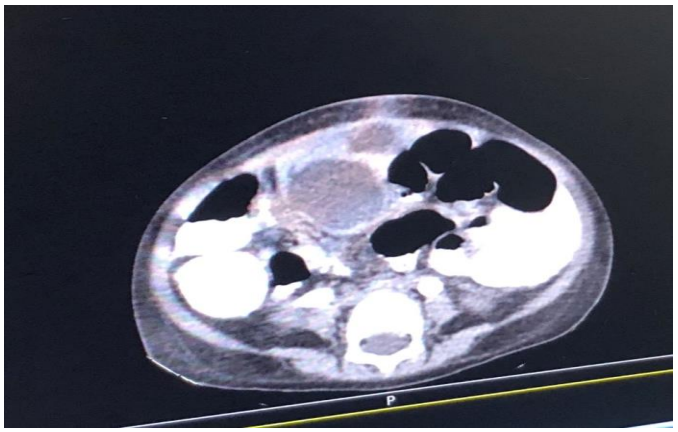

Figure 1: CT scan of abdomen and pelvis with intravenous contrast obtained at time of admission of the patient described in the case report. A large, well-circumscribed mass is seen located near the anterior abdominal wall to the right of midline. This mass has cystic characteristics and contains fluid. Inflammatory changes can be seen surrounding this mass.

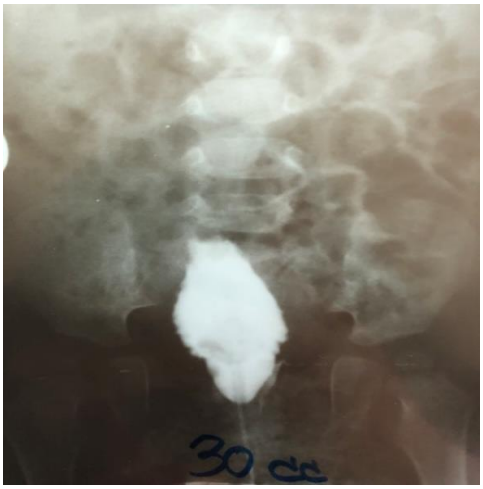

Figure 2: Preoperative contrast voiding cystourethrogram in this patient with Trabeculated elongated bladder (Christmas tree bladder) suggested neuropathic bladder.

An exploratory laparotomy was performed immediately under a preoperative diagnosis of infected Urachal cyst after 24 h antibiotic therapy.

Abdominal exploration revealed an infected urachal cyst was found adhered to the dome of the bladder, causing the wall of the bladder to be thickened and deformed., and a fibrous mass extending from the dome of the bladder adhered to the ileum. This mass was identified as a urachal cyst abscess without intraperitoneal perforation. The postoperative hospital course was good.

Pathologic examination of the excised specimen revealed acute and chronic inflammation of the urachal cyst with abscess formation, edema, lymphoid follicle formation, fibrosis, and severe inflammatory cell infiltration. Few transitional cells such as urachal epithelial cells were seen in the resected specimen.

Bacterial culture of the pus grew pseudomonas aeruginosa.

DISCUSSION

Urachal cysts are just one manifestation of a persistence of all or a portion of the urachus, an embryologic tract that connects the allantosis with the urinary bladder. After birth, this tract becomes the fibrous medial umbilical ligament.

In some individuals, the obliteration of the urachus is incomplete or entirely absent, leading to the 4 generally recognized types of urachal remnants urachal duct, diverticulum, sinus and cyst

The most severe type, a patent urachus, involves complete persistence of the urachus with a patent connection between the bladder and the umbilicus. This type is generally recognized in the earlypostnatal period because of discharge of urine from the umbilicus.

The second and third types are variations of incompletely patent connections.

The urachal sinus communicates with the umbilicus but not the bladder; conversely, a vesicourachal diverticulum is a communication between the urachus and the bladder but not with the umbilicus [2].

Urachal cyst is the final and most common type. It is an incompletely patent urachus that is isolated from both the bladder and the umbilicus.

Urachal anomalies must be at least considered in the differential of every patient with abdominal pain or an abdominal mass, especially in the pediatric population.

However, this presents a problem to the clinician as these disorders may mimic any one of a large number of conditions. For example, the initial presentation of a urachal anomaly may include mild periumbilical erythema (Fig 3), umbilical discharge of urine or pus, urologic complaints consistent with a urinary tract infection, symptoms suggestive of an acute surgical abdomen, or a midline mass.

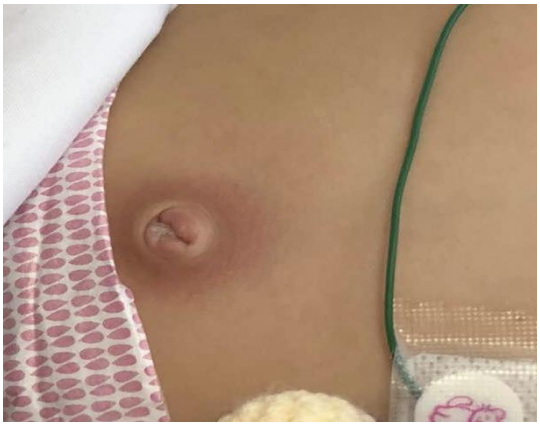

Figure 3: Periumbilical erythema in the patient

The most straightforward presentation is the pediatric patient who has umbilical drainage as the initial complaint, which is likely to be a patent urachus or urachal sinus.

Treatment of urachal cysts is relatively straight forward. Surgical excision is the treatment of choice due to the high rate of recurrence with other modalities. The recurrence rate for an infected urachal cyst that is drained as the primary treatment is greater than 30% [6].

If a urachal anomaly is not resected, the family and patient should be made aware of the potential future risk of malignancy in the future and the need for lifelong screening [5].

Conflict of Interest

None declared

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