Presentation of an ingested foreign body as a vesical calculus: a common condition, but uncommon presentation

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Vesical calculus is a common entity in children of developing countries. Foreign body ingestion is a common occurrence in the pediatric population. An ingested foreign body eroding into the urinary bladder and leading to the formation of a vesical calculus is an extremely rare condition. We encountered a 14-year-old girl who presented with a vesical calculus and a history of ingestion of a nut bolt 7 years earlier. After cystolithotomy and retrieval of the calculus, we noticed that the nut bolt formed its core. As it is an extremely uncommon presentation, it is being reported here, with a brief review of the literature. ***Ann Pediatr Surg*** **13:50–51 © 2017 Annals of Pediatric Surgery.**

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Introduction

Vesical calculus is a common entity in children of developing countries [1]. Urine is a good medium for stone formation. Any nidus may eventually lead to vesical calculus formation [2]. A foreign body present inside the gastrointestinal tract (GIT) may erode into the urinary bladder and lead to stone formation [3].

Foreign body ingestion is a common occurrence in the pediatric population. Frequent items of ingestion include coins, toys, sharp objects, and bones, which most often pass spontaneously [4]. Sometimes they may lead to intestinal perforation or obstruction.

An ingested foreign body eroding into the urinary bladder and leading to the formation of a vesical calculus is an extremely rare condition. We encountered one such patient. Being an extremely unusual condition, it is being presented here, with a brief review of the literature.

Case report

A 14-year-old girl presented with pain in her abdomen for 2 years, along with dysuria for 3 months. There was no history of hematuria or pyuria. There was no significant finding in her examination. Her spine was normal and so were other systems. There was history of nut bolt ingestion when she was about 7 years old. At that time, no treatment was taken for it. A radiograph of the kidney, ureter, and bladder in anteroposterior and lateral positions was taken, which revealed a stone formation over a nut bolt (Fig. 1). A computed tomography scan was taken to look for the exact location of the stone. It suggested the presence of stone in the urinary bladder. The urine examination was normal. Serum biochemical examination was also normal.

Cystolithotomy was planned for the patient, and she was operated upon under spinal anesthesia. After opening the urinary bladder, we noticed a single calculus inside the lumen. After extracting the stone, the urinary bladder was irrigated with normal saline. The bladder was closed in two layers. When the stone was broken into two pieces, we noticed the nut bolt in the core, over which the stone had formed (Fig. 2).

The postoperative period was uneventful. The patient was discharged on the seventh postoperative day. Until now, she has developed no complications.

Discussion

Vesical calculus is very common in our setup, especially in the pediatric population. The formation of bladder stones in children usually has an underlying risk factor that

Fig. 1

Anteroposterior and lateral radiographs of the patient showing the presence of calculus over the nut bolt in the region of the urinary bladder.

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Fig. 2

Stone after performing cystolithotomy. The metallic nut bolt is visible in the core of the calculus.

includes metabolic disorders, urinary tract infection, particularly with *Proteus mirabilis*, anatomical abnormalities of the urinary tract, such as vesicoureteric reflux, and neurological conditions. The common feature in these risk factors is abnormal urine content or increased stasis of urine. Another cause of bladder stones is the presence of foreign bodies in the bladder, such as stents, sutures, or fragments of catheters [5]. Presence of a foreign body in the urinary bladder predisposes to stone formation [2].

Ingestion of foreign bodies during childhood is a common condition seen in the emergency department. Children are often too young or frightened to provide a reliable history. They can remain asymptomatic despite ingestion of a potentially harmful foreign body. Even in the asymptomatic child, retention of an ingested foreign body may necessitate removal depending on the type, location, or size [6]. Often, ingested foreign bodies beyond the esophagus are treated conservatively without intervention [7]. The majority of foreign body ingestions occur in the pediatric population, accounting for 75–85% of patients with foreign bodies in the upper GIT [8]. It has been found that 80–90% of ingested foreign bodies pass spontaneously through the GIT; ~10–20% will require nonoperative intervention. Less than 1% of ingested foreign bodies may require surgical intervention [7]. Magnetic foreign bodies are an especially important cause of complications [9].

Vesicoenteric fistula is an uncommon entity. It may be generally associated with inflammatory bowel disease such as Crohn's disease. Sometimes, it may be seen as a complication of bladder or intestinal cancers. Vesicointestinal fistula as a result of a foreign body is a rare scenario. The foreign bodies causing vesicointestinal fistulae reported in the literature are medical mesh [3], biliary stent [10], chicken bone [11,12], gall stones [13], etc. All such reports generated in the adult population. There is a report in which rectal impalement of a foreign body had subsequently resulted in a vesical calculus [14]. Similar to the present report, there was no complaint regarding GIT. Our literature review did not reveal any such presentation where an ingested foreign body had eroded into the urinary bladder and presented as a vesical calculus. As there was no GIT complication, possibly the vesicointestinal fistula had healed. Hence, we have no idea as to the site of the fistulous communication with the gut. However, as the patient had no GIT problems, we believe that this was of no concern.

Conclusion

The above-mentioned presentation is an exceptional one, where an ingested foreign body had manifested as a vesical calculus after about 7 years of ingestion. Appropriate intervention as per the condition of the patient gives excellent results.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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