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Inflamed Vitelline Cyst with Meckel's Diverticulum Presenting Clinically as an Infected Urachal Cyst in an Elderly Male

[1]Dr Vaishali Baburao Nagose, Professor, Department of Pathology, Dr Ulhas Patil Medical College & Hospital, Jalgaon (Khurd), Maharashtra, India.

[2]Dr Milind P Joshi, Department of General Surgery, Dr Ulhas Patil Medical College and Hospital, Jalgaon (Khurd), Maharashtra, India.

[3]Dr Shivaji P Sadulwad, Department of General Surgery, Dr Ulhas Patil Medical College and Hospital, Jalgaon (Khurd), Maharashtra, India.

[4]Dr Neha Amrut Mahajan, Department of Pathology, Dr Ulhas Patil Medical College and Hospital, Jalgaon (Khurd), Maharashtra, India.

Corresponding Author: Dr Vaishali Baburao Nagose, Professor, Department of Pathology, Dr Ulhas Patil Medical College & Hospital, Jalgaon (Khurd), Maharashtra, India.

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Abstract

Vitelline cyst or omphalo-mesenteric duct cyst is an exceptional occurrence, the congenital anomaly being even rarer than the urachal cyst seen in childhood. We present a case of a 60 years old male with pain and lump in infra-umbilical region and fever; clinically suspected of infected urachal cyst. Ultrasonography and computed tomography showed lump to be located in pre-peritoneal region. However, intraoperatively it was found to be an infected vitelline cyst associated with Meckel's diverticulum confirmed histopathologically. Thus, despite being rare, vitelline cyst enters the differentials of umbilical region lumps even in the old.

Keywords: Vitelline Duct, Meckel's Diverticulum, Urachal Cyst, Congenital Abnormality, Vitelline Cyst, Adult Patient.

Introduction

Vitelline cyst (VC), Meckel's diverticulum (MD) and Urachal remnants are uncommon congenital anomalies, the first one being rarest of them. The complications arising from any of these imitate other common causes of acute abdomen making them a diagnostic difficulty.

Case History

A 60 years old male patient presented with complaint of pain in abdomen since ten days and lump in abdomen since eight days with associative fever. Per abdomen

examination revealed soft abdomen with ill-defined lump in infra-umbilical area, more prominent in leg raising test. Some tenderness in the lower abdomen, without guarding or rebound tenderness was present with normal bowel sounds. The total white blood cell count was raised, while urine examination was normal. Abdominal ultrasonography (USG) showed a cystic swelling in infra-umbilical area suggestive of infected urachus. The contrast enhanced computed tomography (CECT) abdomen confirmed these findings along with its localization to pre-peritoneal region. (Figure 1A, 1B) During exploratory laparotomy a well-defined cystic lesion was found in pre-peritoneal area, with the peritoneal surface having omental adhesions, which on separation showed presence of adjacent adherent meckel's diverticulum having wide mouth. The cyst was excised in toto and wedge resection of MD was done. On gross examination, cut section revealed the cyst to be in continuation of the lumen of the MD on the tip. (Figure 2A, 2B) Histopathological examination (HPE) showed an inflamed perforated MD adhered with the cyst showing lumen of both in continuity. (Figure 3) The cyst was filled with necrotic contents and inflammatory infiltrate with only tiny bit of intestinal lining which too was partly intact. There were no features of malignancy. Post op was uneventful.

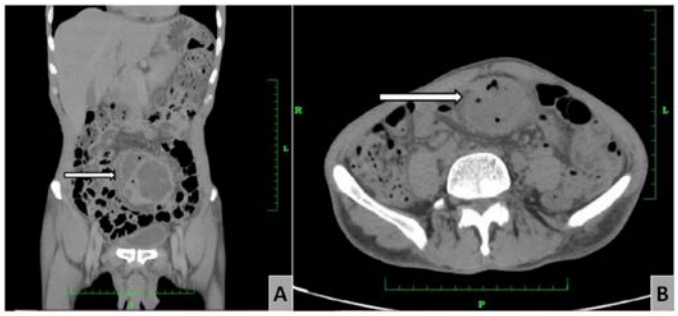

Figure 1A & 1B: Contrast enhanced computed tomography (CECT) abdomen showing a cystic swelling in the pre-peritoneal region (arrow).

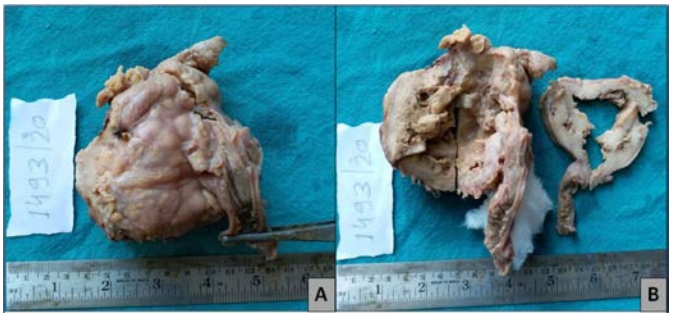

Figure 2: Gross: A. external surface: cyst (left) attached to the Meckel's diverticulum (MD) (right). B. Cut surface: lumen of cyst (left) in continuation of the lumen of the MD (right) on its tip.

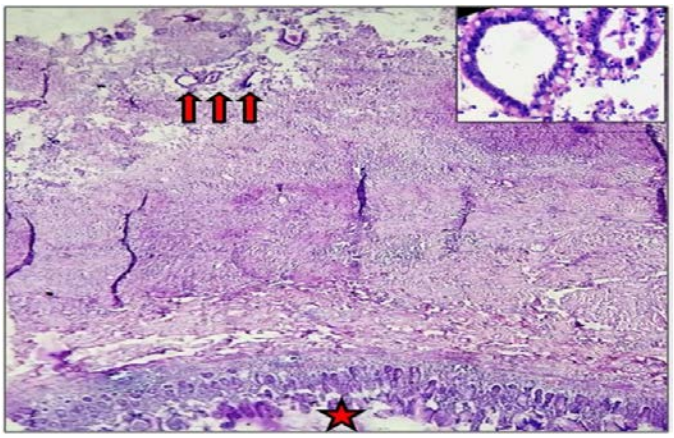

Figure 3: Microscopy: Vitelline cyst (VC) showing disrupted intestinal lining (arrows) with inflammatory infiltrate on the side of Meckel's Diverticulum (star)[40x Hematoxylin & Eosin]. Inset: intestinal glands of lining of VC with goblet cells [400x Hematoxylin & Eosin]

Discussion

Vitello-intestinal duct is the embryonic structure joining the yolk sac to the embryonic midgut. It normally obliterates forming a thin fibrous band eventually disintegrating and getting absorbed at 5th-10th week of gestation. In case of failure of complete atrophy and disintegration, various portions may persist. Thus, vitellointestinal or omphalomesenteric duct anomalies result which include Meckel's diverticulum, patent vitellointestinal duct, vitelline cyst (omphalo-mesenteric duct cyst) or a fibrous cord connecting ileum to the

umbilicus. Meckel's diverticulum (MD) is the most common of these with prevalence of 0.4- 4% of the population, seen three times in males than females. A fibrous connection between MD to the umbilicus occurs in up to 25% of cases.

The vitelline cyst (VC) (omphalo-mesenteric duct cyst) is a rare anomaly and being present with MD is very uncommonly described. VC is less common than urachal cysts as well. It may be located in the intra-peritoneal or the pre-peritoneal space. It was classified as a remnant of omphalomesenteric duct by Nix and Young [1]. It results from obliteration of the vitelline/ omphalomesenteric duct at the umbilical and ileal ends. Similar to MD these are also commoner in boys (male: female ratio 4:1). VCs are typically asymptomatic, otherwise usually present with firm, erythematous cystic swelling at the umbilicus, justifying their other name umbilical cyst. The differential diagnosis primarily is umbilical polyp. Excision of cyst and fibrous band is the treatment of choice [2], and is essential as they may become quite large, get infected, or cause bowel obstruction possibly secondary to volvulus.

Urachal cyst (UC) is a very rare congenital abnormally arising from urachal canal. Urachal canal connects fetal bladder with allantois. On incomplete closure of it, urachal abnormalities - patent urachal fistula, umbilical-urachal sinus, vesicourachal diverticulum, urachal cyst and alternating sinus result [3]. Though UC is the most common of these, consisting of 29-43% of these cases, but the overall prevalence is very uncommon (1:5000) [4].

The concurrent presence of MD and UC together is rather an extremely rare occurrence, with few cases being documented [5, 6]. The presentation is usually of intestinal obstruction mainly.

The presentation of the vitello-intestinal duct anomalies and urachal anomalies is commonly seen in infancy with only few cases in late childhood. However, our case presented in sixth decade, which is rather unusual. The clinical features are of the former are acute abdomen or of intestinal obstruction as abdominal pain, palpable mass, vomiting and tarry or currant-jelly stool, rectal bleeding, umbilical drainage, and umbilical hernia. The triad of symptoms giving raise to suspicion of urachal cyst infection includes a tender midline infra-umbilical mass, umbilical discharge and sepsis. In our case an infra-umbilical lump was present with pain and fever giving rise to clinical suspicion of UC.

A Meckel scan, double-balloon enteroscopy or capsule endoscopy usually confirms the MD in most cases. Preoperative diagnosis of UC is said to be easily done with ultrasonography, computed tomography or magnetic resonance imaging required only in case of doubt [7]. In case of VC it is known to be fallacious in more than 90% of cases. Thus, the diagnosis of VC or UC is usually confirmed intraoperatively only. In this case also intraoperatively the cyst was found to be attached to a MD rather than bladder thus proving it to be VC instead of UC as suspected clinically.

In symptomatic cases of MD amputation from the antimesenteric border of the bowel is suitable when the diverticulum is narrow, resection with a segment of the adjoining ileum may be preferable if the diverticulum is short and broad based.

The morphological findings in present case were the cut section of the cyst to be in continuation of that of lumen of the MD on the tip grossly (Figure 2A, 2B) and on HPE inflamed MD adhered with the cyst showing lumen of both in continuity microscopically as well. The VC is lined by a columnar mucin-secreting epithelium (gastro

intestinal differentiation), may also contain gastric, colonic, pancreatic and/or small intestinal epithelium with smooth muscle layers. The UC is lined by transitional epithelium, with sometimes smooth muscle bundles present in the wall. The lining of the cyst in present case was columnar and not transitional, (Figure 3) thus HPE confirming it to be vitelline cyst rather than urachal. Also no ectopic gastric or pancreatic tissue or malignancy was seen. Thus, the HPE proves to be of value in such cases.

Conclusion

An elderly male clinically suspected of infected urachal cyst presented with pain and lump in infra-umbilical region and fever. Radiologically lump which was found in pre-peritoneal region and intraoperatively associated with Meckel's diverticulum; was confirmed histopathologically as infected vitelline cyst.

Thus, despite being rare, vitelline cyst enters the differentials of umbilical region lumps even in the old.

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