A 23-year-old man presented with one year history of recurrent pyorrhoea from the umbilical area. Specifically, the patient had 5 episodes of omphalitis during the last year prior to his admission to the hospital. All episodes were successfully treated with courses of antimicrobial agents (second generation cephalosporins or amoxicillin/clavulanic acid) by mouth. No fever, abdominal pain or other complaints were reported. His past medical history was significant for dysfunction of the left kidney (79% loss of function in a recent nuclear medicine renal scan), which was attributed to recurrent urinary tract infections during his childhood.

Physical examination on admission showed temperature of 37.4 degrees C, signs of inflammation (redness, tenderness, swelling, and increased temperature) in the umbilical area (Figure 1) as well as purulent umbilical discharge (Figure 2).

Routine laboratory tests including a complete blood count, blood urea, serum creatinine, blood glucose, liver function tests, C-reactive protein, erythrocyte sedimentation rate, and a urinalysis were normal. No growth of microorganisms was found from the culture of the umbilical discharge.

What are the likely underlying causes for the recurrent omphalitis of this young adult?

Differential diagnosis

- Infection of remnants of the allantois
- Infection of remnants of the omphalomesenteric (vitelline) duct
- Recurrent folliculitis
- Carbuncle
- Pilonidal cyst
- Infection due to navel piercing

The vitelline (omphalomesenteric) duct is a tubular embryonic structure that connects the midgut (middle part of the developing gut) with the yolk sac. Obliteration of the vitelline duct is usually completed by the 10th week of gestation. Failure of this physiologic process may lead to various abnormalities (Meckel's diverticulum, vitelline cyst or fistula).

The allantois connects the urogenital sinus with the umbilicus in embryonic life. Normally, the allantois is obliterated during embryological development and the structure left is called urachus. Incomplete oblation can occur and according to its position is leading to patent urachus, urachal cyst, urachal sinus, or vesico-urachal diverticulum.

Diagnosis

Pyourachal cyst. An ultrasound of the umbilical area was performed, which suggested the diagnosis. Computed tomography scanning is especially helpful in patients in whom a malignancy of the urachal remnant is suspected.
Treatment
The patient was surgically managed with complete excision of the infected cyst together with the urachal remnant. In addition, treatment with intravenous ampicillin/sulbactam 1/0.5 gr every 6 hours was given for 5 days. During the 12 months of follow up of the patient, no recurrence was noted.

Teaching points
- Urachal cysts comprise 38% of all urachal abnormalities. (1)
- It seems that, umbilical manifestations such as umbilical discharge, umbilical mass, abdominal or peri-umbilical pain are predominant in patients younger than 30 years old, while bladder manifestations such as dysuria are more common among older patients. (2)
- Clinical signs of urachal cysts are more intense if they are complicated with infection, lithiasis, intestinal occlusion, hemorrhage into the cyst or malignant degeneration.
- Intraperitoneal rupture of a suppurative cyst and subsequently acute peritonitis is the most dangerous of all infectious complications associated with urachal abnormalities. (3)
- Staphylococcus aureus is the most commonly isolated microorganism from an infected urachal cyst. (4)
- Adenocarcinoma may arise from an urachal cyst. This is a rare complication representing about 0,01% of all adult carcinomas and 0,17 - 0,34% of all bladder neoplasms. (5)
- Urachal abnormalities may be a cause of urinary tract infections, which frequently are recurrent. This is explained by the fact that remnants of the allantois may be directly communicating with the bladder. (6)

References

Acknowledgment
- This case was prepared by Sofia K. Kasiakou, MD.