

A Tooth pick in a Haystack

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Citation

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Abstract

We present a case of septic shock that was unrecognized until the patient developed respiratory distress and severe sepsis. The patient's temperature, granulocyte count, anion gap, history of conns adenoma and renal function on presentation offered clues to the correct diagnosis. The final diagnosis of abdominal foreign body due to toothpick ingestion was discovered on exploratory laparotomy.

INTRODUCTION

We report a patient with multiple comorbidities, including psychiatric illness, who developed septic shock after apparently swallowing a toothpick which perforated the stomach or duodenum, creating a liver abscess. His initial presentation was not immediately recognized as septic shock, delaying diagnosis and resulting in progression to severe sepsis.

CASE REPORT

A fifty-one year old Caucasian male presented to the emergency department with confusion, nausea, anorexia, diarrhea, and abdominal pain. The patient was a resident in an adult foster care home and was brought in by his caregiver after an episode of incontinence of stool. Approximately two weeks prior he had a sudden onset of right upper quadrant abdominal pain which became progressively worse. He described the pain as moderate intensity, stabbing and aching, without radiation. He was not able to identify any aggravating or relieving factors. He had some nausea but no vomiting. According to the caregiver, for the last two weeks the patient had not been acting like himself, was not eating or participating in his normal activities. He denied having flank pain, fevers, chills, or night sweats. He denied dysuria, frequency or hesitancy.

His past medical history was significant for Conn's syndrome diagnosed three months prior and treated with spironolactone. He also had hypertension, history of a cerebral vascular accident, and a traumatic brain injury. He had a psychiatric history of bipolar disorder and schizoaffective disorder and was on multiple psychiatric

medications. He had a history of cocaine, heroin, and tobacco abuse, but no use in the recent past. His current medications included acetaminophen, aspirin, ziprazidone, donepezil, diphenhydramine, escitalopram, spironolactone, omeprazole, temazepam, hydralazine, lisinopril, nifedipine, and oxcarbazepine.

On arrival, the patient's temperature was 97.2° F (36.2°C), his pulse was 92 beats per minute, blood pressure was 90/56 mm Hg, and oxygen saturation was 98% on room air and his respiratory rate was 24. Physical examination revealed moist mucous membranes, heart was regular rate and rhythm and lungs were clear to auscultation bilaterally. On examination of the abdomen, the patient had moderate pain in the right upper quadrant with normal bowel sounds, no distension or peritoneal signs. There was no tenderness of the costovertebral angles. Abdominal x-ray demonstrated cardiomegaly and a non-obstructive bowel gas pattern with no free air. A 12-lead electrocardiogram was normal. Urinalysis was positive for urobilinogen of 4.0 mg/dl (normal 0.2-1.0), but was negative for infection. White blood cell count was mildly elevated at 11.8 K/mcL. Granulocytes were elevated at 11.2 K/mcL (normal 1.5-6.6). Hemoglobin was 8.9g/dL. Urea nitrogen was 92 mg/dL (normal 7-26), creatinine was 4.8 mg/dL (normal 0.5-1.5). Liver enzymes were mildly elevated with aspartate aminotransferase of 146 U/L, and alanine aminotransferase of 187 U/L. Sodium was 131 mmol/L, bicarbonate was 11 mmol/L. Amylase and lipase were normal. Glomerular filtration rate was estimated to be 14 ml/min/1.73m². (See Table 1 for complete results). The patient was admitted to the hospital with the diagnoses of acute on chronic renal failure, acute anemia, and gastroenteritis.

Figure 1

Table 1	Day 1	Day 2	
	ER	5:54	####
BUN	92	105	113
CREA	4.8	5.1	5.6
NA	131	133	136
K	4.7	5.8	5.9
Cl	100	103	108
Bicarb	11	8	7
ALT	187	160	150
AST	146	76	78
Alk Phos	260	183	181
Glucose	126	94	123
Anion Gap	20	22	21
GFR	14	13	11
Amylase	50		
Lipase	133		
Phos		9.3	11.2
Mg		2.2	2.3
Trop	<0.05	<0.05	<0.05
CK	75		
CKMB			
BNP	158		
pH			7.22
PCO2			18
PO2			73
HCO3			7
BE			-19
O2 Sat			90
FiO2			21
HgB	8.9	10.2	
Hct	26.5	30.4	
WBC	11.8	4.1	
Gran	11.2	3.8	
Bands		64%	
Lymph	0.6	0.2	
Mono	0	0	
Platelets	286	327	
PTT	22.8		
PT	35		
INR	1.8		

The following morning the patient's potassium and

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phosphate were elevated to 5.8 mmol/L and 9.3 mg/dL respectively. Bicarbonate was 8 mmol/L (See Table 1). The results of an MRI (Figure 1) of the abdomen done as an outpatient five days prior as part of his evaluation for Conn's syndrome were received that morning, showing a cystic lesion or abscess within the left lobe of the liver. A CT scan of the Abdomen with oral contrast was ordered which shows enlargement of the lesion, now measuring 16 cm long x 10.5 cm transverse x 11.6 cm.

Three hours later, the patient developed respiratory distress requiring intubation. Arterial blood gasses showed severe metabolic acidosis with pH 7.22, pCO₂ 18, pO₂ 73, HCO₃⁻ 7, base excess -19, and oxygen saturation 90% on room air. His blood pressure was low requiring pressure support, and his heart rhythm progressed to ventricular tachycardia from which he was successfully resuscitated. He required pressors to maintain blood pressure. The patient's abdomen became distended and tender with guarding and rigidity. He was emergently taken to the operating room for an exploratory laparotomy. Exploration of the abdomen revealed a toothpick within the peritoneal cavity as well as two liters of pus. (Figure 2 and Figure 3). A perforation was not identified. The patient was started on antibiotic therapy consisting of piperacillin/tazobactam and metronidazole.

Figure 2

Figure 1: (Left) MRI from 5 days prior to admission showing a cystic lesion in the liver measuring 9.8 x 9.7 cm. (Right) CT done 6 days later, showing enlargement of the lesion, now measuring 16 cm long x 10.5 cm transverse x 11.6 cm AP.

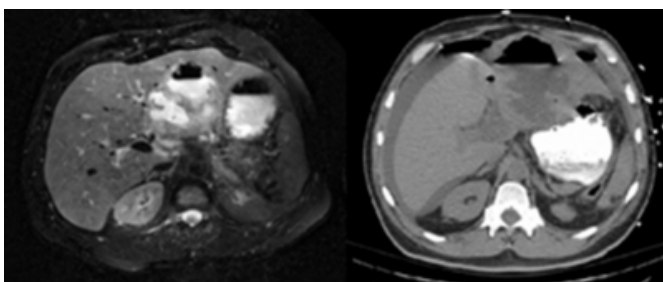


Figure 3

Figure 2

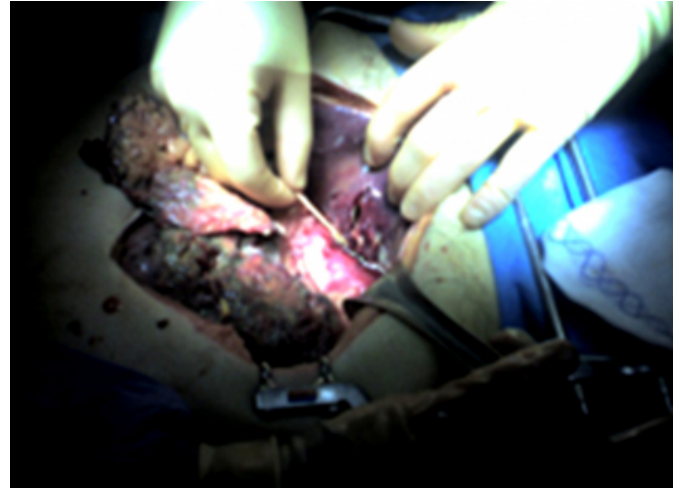


Figure 4

Figure 3



DISCUSSION

With a nonspecific presentation, diagnosis of a foreign body requires a high index of suspicion. In this case, the patient had imaging of his abdomen utilizing magnetic resonance imaging (MRI), x-ray, computed tomography scan (CT), and ultrasound. Each of these modalities failed to identify the problem. A toothpick, being made of wood, is radiolucent and would not be detected by x-ray. It is not likely that a toothpick within the abdominal cavity would be lodged within the coronal, sagittal, or transverse planes. With its small diameter and random angle relative to the image, the toothpick would appear as a small spot that would be easy to overlook if it even appeared on CT or MRI. In this case, the patient also had a liver abscess that may have obscured the image. Published data emphasizes on advanced imaging studies including ultrasonography and CT scanning for the

detection of foreign bodies including tooth pick.⁶ Liver abscess as a rare complication of foreign body ingestion has been described in the literature.^{7,8} Sharp objects including chicken/fish bones, wooden/plastic toothpicks can penetrate the gastric wall resulting in formation of liver abscess.⁶

Figure 5

Table 2 : Criteria for Systemic Inflammatory Response Syndrome (SIRS) (Need 2 of 4 for diagnosis)

1. Temperature	<36° C or >39°C
2. White Blood Cell Count	>12,000 or <4,000 or >10% bands
3. Heart Rate	>90 bpm*
4. Respiratory Rate	>24 bpm^ or PaCO ₂ <32mm Hg
Sepsis = SIRS + infection	
Severe sepsis = SIRS + infection + end organ damage	
Septic shock = Severe sepsis + refractory hypotension (<90 mm Hg or 40% below baseline)	
* beats per minute	
^ breaths per minute	

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