ANNALI ITALIANI DI CHIRURGIA

Digital Edition
e-publish on-line
ISSN 2239-253X
Direttore Nicola Picardi

From occult parodontopathy to splenic abscess leading to septic shock

Ann Ital Chir, Digital Edition 2018, 7
pii: S2239253X18029717 - Epub, December 5
free reading: www.annitalchir.com

Martina Guerra, Cristiana Iacuzzo, Fabio Porcelli, Nicolò de Manzini

General Surgery Department, University Hospital of Trieste, Trieste, Italy

From occult parodontopathy to splenic abscess leading to septic shock

We present a case of a suspect splenic hematoma in an anticoagulated patient with an ignored diabetes mellitus, come to our emergency department. Lab tests showed increased CRP and INR, with an incoming hepatorenal syndrome. During the CT-scan the patient became unstable and the hemoglobin decreased. We decided for an emergency explorative laparotomy finding instead purulent collections with no evidence of bleeding, so we drained the pus and performed a splenectomy. After we excluded all the common primary sites of infection, we found out a severe chronic parodontopathy caused by multiple colonies of Candida albicans.

KEY WORDS: *Candida albicans*, Parontopathy, Splenectomy, Splenic hematoma

Case report

A 74 years-old woman presented to our emergency room complaining left flank abdominal pain and tachycardia. The patient's obese, her history reported only atrial fibrillation treated with Warfarin and ignored diabetes mellitus. Lab tests showed a CRP of 253 mg/L, a normal WBC, a normal Hb, a creatinine of 3,17 mg/dL, a PT-INR of 3,56, a fibrinogen of 1091 mg/dL, and a Glycemia of 260 mg/dL. E-FAST findings were compatible with an expanding subcapsular splenic hematoma, nevertheless in absence of history of trauma. A CT-scan with contrast was performed and it confirmed the presence of a splenic subcapsular liquid layer, extended also between liver and stomach, but didn't show any active bleeding (Figs. 1, 2).
Right after the CT-scan the patient became unstable with hypotension, tachycardia and an incoming hepatorenal syndrome, not responsive to resuscitation maneuvers. Lab tests showed an increasing WBC (15 X 10^3/mcl), Urea (188 mg/dL), PCT (5.33 ng/mL) and a decreasing Hemoglobin (10,8 g/dL).
MEDS (Mortality in Emergency Department Sepsis) and APACHE II (Acute Physiology And Chronic Health Evaluation II) scores have been used to evaluate the general risk of the patient. MEDS score consists of 9 parameters (terminal illness, age >65y/o, nursing home resident, lower respiratory infection, platelet count <150 x10^3/mcL, bands >5% on a WBC differential, tachypnea or hypoxemia, septic shock and altered mental status) and is a reliable prognostic indicator for intra-abdominal infections [1]. Our patient scored a MEDS of 11 points, so she had a 9.3% mortality risk in the following 28 days. APACHE II is another score to predict disease severity and its related mortality, considering age, PaO2, rectal temperature, mean arterial pressure, arterial pH, heart and respiratory rates, Na+, K+, creatinine, hematocrit, WBC, GCS. Our patient's estimated non-operative management mortality according to APACHE II score was 40%.
Suspecting an expanding subcapsular splenic hematoma in anticoagulated patient, we decided to perform an emergency explorative laparotomy. In the operatory room we found concamerated purulent collections between

Pervenuto in Redazione Ottobre 2018. Accettato per la pubblicazione Novembre 2018
Correspondence to: Martina Guerra, MD, General Surgery Department, University Hospital of Trieste, Strada di Fiume, 447, 34149 Trieste, Italy (e-mail: martina.guerr@gmail.com)

Fig. 1

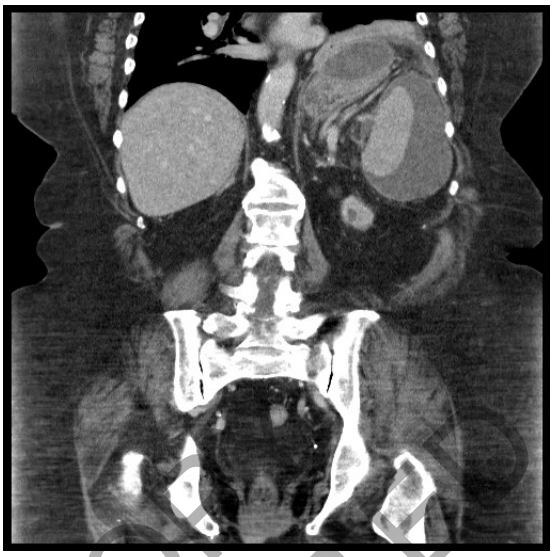

Fig. 2

stomach and liver, and below the splenic capsula with no evidence of bleeding. We debrided the abdominal collections and a splenectomy was performed. After an abundant peritoneal lavage with saline solution, 2 laminar drainages were put in the abdominal cavity (splenic bed and Winslow's foramen). The intraoperatory microbiological examination of the purulent collections was negative for aerobic and anaerobic bacteria and for fungal pathogens.

The patient was transferred to the Intensive-Care Unit to be strictly monitored and in order to evaluate the possible primary sites of infection.

In the first post-operative days (PODs) the most common causes of metastatic abscesses have been excluded. Hemocultures, and urinecultures resulted negative; a transthoracic and trans-oesophageal echocardiogram, a fundus oculi examination were carried out without any findings. The routinary sourveillance microbiologic analysis showed a negative rectal tampon versus a positive pharyngeal one. The isolated microbial agents were *Candida albicans* and *Candida non albicans;* for this reason a bronchoalveolar lavage was performed and it confirmed the presence of the same pathogen (*Candida albicans*).

The stomatologists have been asked to evaluate the oral cavity for a possible site of primary infection. An occult severe chronic parodontopathy have been found and treated with multiple dental extractions and alveolar toilette. A gingival biopsy confirmed the presence of the same colonies of *Candida albicans*.

After 15 days of a broad spectrum antimicrobial therapy with *Fluconazole, Meropenem and Vancomycin* at 21st POD the patient have been discharged with no evidence of surgical complications nor signs of infection.

Splenic abscesses are an uncommon but potentially fatal condition with an autopsy incidence of 0.14-0.7% [2]; fewer than 800 cases have been reported in the literature [3]. In the past the mortality rate was near 100% since its non-specific presentation and delayed diagnosis [1]. They generally occur in case of cancer, acquired or primitive immunodeficiency, abdominal trauma, metastatic infection, splenic infarction, and diabetes [4]. Hematogenous spread is the most common cause of splenic abscesses and usually comes from endocarditis or contiguous infection seeding [5]. The involved microbial agents are various, from bacterial (gram-negative bacilli, gram-positive cocci, mycobacteria) to fungal ones, with geographical variation and population difference [4]. Although blood cultures should still be routinely performed, they are useful in just half of the cases. Diabetes mellitus may be an important co-factor in the pathogenesis of splenic abscesses [3] as well as Candidiasis [6].

Untreated dental infections may lead to serious complications. The infectious and inflammatory process surrounding the maxillary bone can spread into the venous system and subsequently seed to parenchimatous organs like spleen and liver, or cause other metastatic purulent collections within the organism. Usually the most involved pathogens in this process are *Streptococci*, but every oral cavity commensal pathogen can be the causal agent of parontopathy and consequent septic embolism [7]. Dental abscesses treatment consists in removing the source of the infection and draining away the pus.

The early diagnosis of splenic abscess, an eterogenous disease, is important but extremely difficult due to many conditions that may simulate it, both clinically and radiologically. The most common symptoms are fever (84-95% incidence in literature), left upper quadrant pain (39-49%), splenomegaly (30-67%), left pleural effusion (19-41%) [8] and leukocytosis >13 x 10^3 mcl WBC. The diagnosis of splenic abscess requires imaging studies, including abdominal ultrasound or CT-scan, showing solitary or multiple lesions depending on the causal

agent [9]. Bacterial and amoebic abscesses appear as solitary hypoechoic poorly defined round lesions; fungal abscesses larger than 4 cm show a "target-like" pattern with hypoechoic center, while smaller multiple lesions are round, smooth, and hypoechoic [3] CT-scan is not always necessary in the diagnostic process, but it can be useful for the differential diagnosis; the reported sensitivity of CT-scan is in fact around 100%. The characteristic image of splenic abscess reveals a low-density lesion that fail to enhance after intravenous contrast. CT-scan can detect the size, topography and eventual spreading to surrounding structures (liver 33%, subfrenic area 15%, pancreas 11% etc) [9].

Treatment depends on the patient's condition, comorbidities, and primary disorder as well as the characteristic of the abscess. Broad-spectrum antibiotic therapy is a fundamental rule in the early management of splenic abscesses. If the cultures reveal the etiologic pathogen the choice of the antimicrobial therapy should be based on the antibiogram. Nevertheless the optimal treatment is still unclear. Percutaneous drainage has recently been considered as an acceptable treatment for splenic abscess in selected [10]. Percutaneous US- or CT-guided drainage for single abscess and splenectomy for multiple abscesses seem to be safe and effective treatment choices [3]. Aspiration or drainage with percutaneous maneuvers can be used as bridge to surgery in particular for high-risk patients, since it can help to avoid potential life-threatening infections [4]. If skilled interventional radiologists are not available and in "low-volume" centers the splenectomy remains the gold standard procedure [10].

Candidemia's mortality is up to 47% and it worsens in case of septic shock. The early start of the antifungal therapy and infection's source control are necessary to reduce the risk of death. Candida infections could present as superficial infections or invasive disease associated with metastatic organ involvement. In most cases this type of infection affects immunocompromised patients, but it should be suspected even in immunocompetent patients with others comorbidities (like diabetes). In 50% of candidemias blood cultures and site cultures result negative by poor sensitivity and this is a significant obstacle to early detection and intervention [6].

Splenic abscesses may have atypical presentations and characteristics, involving different pathogens. Even in immunocompetent patients with comorbidities - like diabetes - splenic abscesses can be caused by pathogens that usually affect immunocompromised patients. Performing a thorough physical examination including the oral cavity to evaluate all possible etiologies of infectious sources is fundamental when metastatic infection is found. Thanks to new technologies and the possibility to perform emergency US and CT-scan the early detection of splenic abscesses is feasible. To quickly start the correct antimicrobial therapy is essential as well as operative management, with or without splenectomy, when it's required.

Riassunto

Presentiamo un caso giunto alla nostra attenzione di sospetto ematoma splenico in una paziente in terapia anticoagulante e affetta da diabete misconsciuto. Al suo arrivo in pronto soccorso gli esami ematochimici mostravano un incremento degli indici di flogosi, dell'INR e un'incipiente sindrome epato-renale. Durante la TC addome eseguita in regime d'urgenza, che mostrava un verosimile ematoma splenico, la paziente è diventata instabile, con un rapido decremento dell'emoglobina. In considerazione del quadro clinico e dell'instabilità emodinamica della paziente, si era deciso per una laparotomia esplorativa in regime d'urgenza. In corso di intervento inaspettatamente non sono stati evidenziati sanguinamenti attivi, ma bensì raccolte purulente, intra ed extraspleniche, che vengono drenate dopo aver eseguito la splenectomia. In seguito all'esclusione di tutti i più comuni focolai d'infezione primitiva, è stata infine scoperta una severa parodontopatia cronica, veicolata da multiple colonie di *Candida albicans*.

References

1. Shang-Kai Hung, et al.: *Comparison of the mortality in emergency department sepsis score, modified early warning score, rapid emergency medicine score and rapid acute physiology score for predicting the outcomes of adult splenic abscess patients in the emergency department*. PLoS One, 12(11):e0187465.

2. Smyrniortis, et al.: *Splenic abscess: an old disease with a new interest*. Dig Surg, 2000; 17:354-57.

3. Chee Yung Ng, et al.: *Ten-year series of splenic abscesses in a general hospital in Singapore*. Ann Acad Med Singapore, 2008; 37:749-52.

4. Won-Suk Lee, et al.: *Splenic abscess: A single institution study and review of literature*. Yonsei Med J, 2012; 52(2):288-92.

5. Mei-Chun Lee, Chung-Ming Lee: *Splenic abscess: An uncommon entity with potentially life-threatening evolution*. Canadian J of Infect Dis and Med Microbiol, 2018; 8:610-57.

6. Pappas, et al.: *Clinical practice guideline for the management of candidiasis: 2016 update by infectious diseases society of America*. Cl Infect Dis.

7. Neumayr, et al..: *Multiple liver abscesses with isolation of Streptococcus intermedius related to a pyogenic dental infection in an immune-competent patient.* Eur J Med Res, 2010; 15:319-322. 10.1186/2047-783X-15-7-319.

8. Kuo-Chin Chang, et al.: *Clinical characteristics and prognostic factors of splenic abscess: A review of 67 cases in a single medical center of Taiwan*. World J Gasteroenterol, 2006; 12(3):460-64.

9. Cheng-Cheng Tung, et al.: *Splenic Abscess: An Easily Overlooked Disease*. Am Surg, 2006; 72(4):322-25.

10. Thanos L, et al.: *Percutaneous CT-guided drainage of splenic abscess*. AJR, 2002; 179:629-32.