Infeção Fulminante Pós-Esplenectomia por *Capnocytophaga* Spp.: Caso Clínico

Overwhelming Post-Splenectomy Infection Caused by Capnocytophaga Spp.: Case Report

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Resumo:

O baço possui funções imunológicas e hematológicas importantes. A esplenectomia está indicada na esferocitose hereditária, doença em que os eritrócitos são destruídos no baço por defeitos estruturais.

Doentes esplenectomizados apresentam risco aumentado de infeção e de infeção fulminante pós-esplenectomia, que se caracteriza por um quadro inicial de febre, mialgias, cefaleia e vómitos.

As bactérias *Capnocytophaga* colonizam a mucosa oral, podendo causar infeções oportunistas em doentes esplenectomizados.

Os autores identificam o caso de um doente de 38 anos, esplenectomizado, que recorreu ao Serviço de Urgência por febre, vómitos e mialgias. As hemoculturas mostraram o crescimento de *Capnocytophaga* spp. Apesar das medidas instituídas, o doente evoluiu rapidamente para choque séptico, culminando na sua morte.

Os autores pretendem alertar para esta condição rara associada a alta mortalidade, com o objetivo de aumentar a sobrevivência destes doentes, através da identificação e intervenção imediatas.

Palavras-chave: Capnocytophaga; Complicações Pós-Operatórias; Esplenectomia/efeitos adversos.

Abstract:

The spleen performs important immunological and hematological functions. Splenectomy is performed in hereditary spherocytosis, where the erythrocytes are destroyed in the spleen due to structural defects.

Splenectomized patients have an increased risk of infection and are predisposed to a condition called over-whelming postsplenectomy infection (OPSI). OPSI initially presents with fever, myalgia, headache and vomiting.

Capnocytophaga spp. colonizes oral flora and can cause opportunistic infections in splenectomized patients.

The authors report the case of a splenectomized 38-year-old man admitted with a viral-like syndrome, with fever, vomiting and myalgias, suggesting an OPSI. Blood cultures were positive for Capnocytophaga spp. Despite the correct measures applied, the patient had a rapid evolution on septic shock leading to death.

The authors aim to alert to this rare condition associated with high mortality, to improve the survival by timely identification and immediate management.

Keywords: *Capnocytophaga; Postoperative Complications; Splenectomy/adverse effects.*

Introduction

The spleen performs immunological functions such as blood decontamination from pathogens and microorganisms; induces T lymphocyte formation and enhances cytotoxic T-cell response, produces antigen-specific antibodies, promotes the clearance of polysaccharide-encapsulated bacteria and produces immune mediators. It also has hematological functions as the removal of undesired intra-erythrocytic inclusions and phagocytosis of defective or old erythrocytes.[1]

Hereditary spherocytosis (HS) is one of the most common forms of congenital hemolytic anemia with an incidence of 1:2000. Defects in structural proteins of the erythocytes turn them into spherical, rigid and susceptible to destruction in the spleen.[2]

HS is one of the absolute indications for splenectomy because it leads to a cessation of the red cell destruction.

Although the spleen is not imperative for survival, its removal is associated with an increased risk of infection, particularly by encapsulated organisms.[1,3] In addition to their increased risk of infection, splenectomized individuals are at risk to over-whelming post-splenectomy infection (OPSI). This risk is higher for the first 3 years post-splenectomy; however, it remains elevated throughout an individual's lifespan.[1] OPSI may initially presents with symptoms like fever, myalgia, headache and vomiting.[1,3] These are followed by rapid deterioration to fulminant septic shock. Common etiologic agents of OPSI are encapsulated organisms (*Streptococcus*

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pneumoniae, Neisseria meningitidis, Haemophilus influenzae) and Gram-negative bacteria (*Pseudomonas aeruginosa, Capnocytophaga canimorsus and Bartonella* spp.).[1]

Capnocytophaga species are gram-negative bacilli that colonize oral flora.[5] All of *Capnocytophaga* species have been reported as pathogens in humans and they can cause opportunistic infection, especially in asplenic and immunocompromised patients.[5,6]

Case Report

The authors report a case of a 38-year-old man who presented to the emergency department due to fever (38.5ºC), vomiting and myalgias for 14 hours. His past medical history was significant for a hereditary spherocytosis with a resultant splenectomy at the age of 9. He owned a cat as a pet.

At the physical examination, the patient was oriented, tympanic temperature 38.1º, blood pressure 81/51 mmHg, heart rate 113 bpm, eupneic at rest with a respiratory rate of 18 cpm, oxygen saturation 98% with fraction of inspired oxygen of 21%. Skin and mucous membranes had normal colour. No signs of oral inflammation. Pulmonary auscultation with crackles at left hemithorax base. Normal cardiac auscultation and abdominal exam. No maleolar oedema.

The laboratory study revealed leukocytosis: 28.71x10^9/L with 95.5% neutrophilia, C-reactive protein: 2.72 mg/dL, hemoglobin: 15 g/dL, platelets: 270x10^9/L, serum creatinine: 1.5 mg/dL, urea: 43 mg/dL, sodium: 136 mmol/L, potassium: 4.4 mmol/L.

Arterial blood gas (FiO2 21%) showed pH 7.42, pO2 86 mmHg, pCO2 32 mmHg, HCO3 20.8 mmol/L and hyperlactatemia: 4.5 mmol/L.

The chest radiography showed a consolidation in the left lung base.

The patient was started on amoxicillin/clavulanic acid 2200 mg and fluid challenge in the first hour. Despite this, re-evaluation arterial blood gas showed an impaired hyperlactatemia: 4.8 mmol/L, and there were no significant changes in blood pressure (85/53 mmHg).

The patient had a rapid evolution to septic shock with multiple organ failure and unsuccessful life support, leading to death in less than 8 hours.

Blood cultures obtained at admission were later on positive for gram negative bacilli with *Capnocytophaga* spp., with no antimicrobial susceptibility testing available and no further investigation about which *Capnocytophaga* specie was present.

Discussion

On admisson, this patient had fever, hypotension [mean arterial pressure (MAP): 61 mmHg; after fluids: 64 mmHg], tachycardia, leukocytosis, impaired kidney function and hyperlactatemia. Applying the Sequential Organ Failure Assessment Score, by scoring 2 points (MAP <70 mmHg and creatinine below 1.2-1.9 mg/dL), the diagnosis of sepsis could be confirmed. Taking this into account and the consolidation in the left lung base suggesting a pneumonia, the patient was immediately started on empiric antibiotic with amoxicillin/clavulanic acid and fluid resuscitation.

The patient' splenectomy presented a clinical challenge. Overwhelming post-splenectomy infection is a rare medical emergency as cardiovascular collapse and death have been reported to occur within 12-24 hours of the onset of symptoms, with a mortality rate of 50%-70% within 48 hours.[1,4]

Our case also illustrates the severity of *Capnocytophaga*. Bacteremia with *Capnocytophaga* spp. is extremely rare but potentially severe, with 25%-60% mortality.[5]

The species *Capnocytophaga canimorsus* is a component of canine and feline oral flora that can cause opportunistic infections following dog or cat bites.[5]

Early identification of the implicated organism can help guide antibiotic therapy.[3] Therefore, it would have been important to know which specific *Capnocytophaga* species was present in cultures.

The antibiotics to which *Capnocytophaga* species are known to be susceptible are penicillin, clindamycin, cephalosporins, quinolones, linezolid, tetracyclines, Imipenem and their combinations with beta-lactamase inhibitors.[6] The first dose of antibiotics is the most important step to survival[3] and our patient was immediately started on a penicillin and a beta-lactamase inhibitor. However, this case report shows that despite adequate treatment, the mortality rate of OPSI is high.[1]

Some strategies to prevent infections in splenectomized patients are vaccination (mainly anti pneumococcal, *Haemophils influenza* type b, meningococcal and annual influenza vaccinations) and patient education[1] to increase their awareness of higher risk of infection. An early presentation to medical services in case of illness is imperative in limiting the progression of sepsis in the splenectomized patient.

In conclusion, the authors emphasize the importance of the early diagnosis in over-whelming post-splenectomy infection, with immediate management and tight clinical surveillance in all splenectomized patients, given their predisposition to infection and their quick deterioration and adverse outcome. ■

Declaração de Contribuição

CG – Aquisição, Análise e interpretação de dados, escrita do artigo, aprovação da versão final a ser publicada

CC – Interpretação de dados, reavaliação do rascunho, aprovação da versão final a ser publicada

JFR – Interpretação e análise de dados, aprovação da versão final a ser publicada

TE, LA – Interpretação de dados e reavaliação do rascunho, revisão final e, aprovação da versão final a ser publicada

Todos os autores aprovaram a versão final a ser

Contributorship Statement

RCG – Data acquisition, analysis and interpretation, writing and approval of the final version to be published
CC – Interpretation of data, reassessment of the draft, approval of the final version to be published
JFR – Data interpretation and analysis, approval of the final version to be published
TE, LA – Data interpretation and draft reassessment, final review and approval of the final version to be published
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