Febrile neutropenia studies in Brazil - treatment and cost management based on analyses of cases

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The management of neutropenia is a challenge in the clinical practice. It is known since the 1960s that risk of infection is associated with the intensity and duration of neutropenia[1].

Neutropenic patients with an infection usually present incomplete signs and symptoms considering the severity of the condition. Thus, rubor, erythema and pustules may not be seen in neutropenia associated with a cutaneous infection, just as pulmonary infections may fail to present classical signs and symptoms such as cough, dyspnea and characteristic physical examination findings[2]. Sometimes the only sign found is fever. Studies published in the 1970s have taught us that the quick administration of broad-spectrum antimicrobial agents dramatically reduces mortality from 50-90% to 10-40% within the first 72 hours of treatment[3-5].

It is also known that the microbial isolation rate is low, and that there is a predominance of gram-negative bacilli. The use of antibiotics for gram-positive cocci should be adopted in cases of clear-cut risk situations such as mucositis, evident infection of a central venous catheter, hemodynamic instability and cutaneous infections[6]. As of the 1980s, several studies on febrile neutropenia were performed in an attempt to differentiate risk groups for severe complications and death. The studies started with Talcott et al., who showed that patients with neutropenia undergoing chemotherapy and fever at home, without comorbidities and with the oncological disease under control, presented a low risk[7,8]. In 2000, a study that standardized the risk evaluation of patients with febrile neutropenia undergoing chemotherapy was published. The index of the Multinational Association for Supportive Care of Cancer (MASCC) standardized the risk evaluation in febrile neutropenia based on clinical parameters; this evaluation that took into account the intensity of symptoms, hypotension, presence of previous fungal infection, dehydration, age and home fever was widely tested and recognized as one of the best methods to screen patients with febrile neutropenia[9]. In Brazil, there are few studies that applied the MASCC index[10,11], but the mortality rate among high- and low-risk febrile neutropenia groups is notorious (Table 1).

Table 1 - Mortality rate among high-risk and low-risk febrile neutropenia groups

Source	Febrile neutropenia events (n)	Mortality rate	
		Low-risk (%)	High-risk (%)
Klastersky et al.[9]	756	6	39
Cherif et al.[12]	105	2	5.2
Girmenia et al.[13]	90	3	40
Baskaran et al.[14]	116	7	29
Viana et al.[11]	53	-	21.8
Bellesso et al.[10]	178	4.2	30.8

Differentiating the risk groups is important because it can lower the costs of the treatment of febrile neutropenia. Pharmacoeconomic studies have estimated that the cost of each febrile neutropenia event varies between US$ 2000 and US$ 11000. According to Canadian and British studies, 25.8% of this cost is related to antibiotics and 16.4% to complementary tests. It is further estimated that about US$ 5000 can be saved per febrile neutropenia episode when the patient can be discharged early and followed up as an outpatient. The use of orally instead of intravenously administered antibiotics reduces the cost by about 80%[15].

The article published in this journal, "Neutropenic patients and their infectious complications at a University Hospital"[16], reports on a cross-sectional study of the universe of neutropenic inpatients with infections in a general hospital. This matter needs to be further studied, and Brazilian multicentric prospective studies need to be performed given the importance of studies like this in reconfirming the relevance of the MASCC index in respect to mortality. The profile of the microbial agents isolated and their sensitivity profile help our understanding of febrile

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neutropenia cases and improves treatment provided to patients and a better management of the costs.

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