

EDITORIAL**HEALTHCARE-ASSOCIATED INFECTION**

Healthcare-associated infection (HAI), also known as nosocomial infection or intrahospital infection, is one of the major problems of contemporary healthcare worldwide. This notion has evolved over time (1).

The negative consequences regarding the state of health, as well as the high costs resulting from additional care, require the implementation of feasible strategies, with objectives oriented towards the selection of measures to prevent, limit and control HAIs (2).

The etymology of the word “nosocomial” (hospital) comes from the Greek language, the word nosokomeion (νοσοκομειών), where (nosos means disease, and komeo - to care) (3).

Joseph Felsen, a physician in New York, was the first to use the term "hospital epidemiologist" to describe an expert in “investigating outbreaks of infectious disease occurring or spreading within an institution.” In a 1939 presentation to the American Public Health Association, Felsen called for the necessity of an epidemiologist in every hospital as part of a comprehensive program to prevent infectious diarrhea (3).

In 1962, New York City’s public health authorities created a local hospital epidemiology program (2).

Since 1970s, there has been an increase in the prevalence of HAIs due to the excessive use of broad-spectrum antibiotics and cephalosporins, under the pressure of which multi-resistant microbial strains have been selected (for example, methicillin-resistant *Staphylococcus aureus* - MRSA, extended-spectrum beta-lactamase – BLSE, vancomy-

cin-resistant *enterococcus* - VRE) (5).

The increased prevalence of HAI has been associated with:

- the invasiveness of diagnostic and therapeutic procedures,
- the care of a high number of immunosuppressed patients or patients with diseases,
- the high incidence of infectious pathology of viral or fungal etiology,
- the emergence of emerging infections,
- the neglect of the control system by the failure of the medical staff to observe the standard precautions,
- failure to adapt to HAI surveillance system (6).

The most important clinical distributions are urinary tract infections, surgical wound infections, respiratory tract infections, skin infections, bacteremia.

The infectious disease specialist is facing an increasingly acute problem related to:

- a) antibiotic resistance;
- b) the presence of multidrug-resistant bacteria in what is another “community infection”. This is due to the population mix, the development of the home care sector, patients with multiple comorbidities who have an increased average life span, with survival in the conditions of intensive care and with frequent access to health services;
- c) the complicated introduction on the market of a new antibiotic that can take decades
- d) the presence of opportunistic germs in immunosuppressed patients, which have become etiological factors of serious sepsis,

bronchopneumonia.

From the experience of the last years, in current practice, we encounter germs that we can call “classics”, that have acquired resistance to multiple antibiotics, especially *Escherichia coli* and *Klebsiella spp.*, which are producing ESBL. Taking this into account, we observed that the cases of resistance to the reserved antibiotics, like carbapenems, are increasingly frequent. Another germ that was panresistant is *Aspergillus fumigatus* that is encountered more often in immunocompromised patients especially HAI in intensive care units (ICU).

In our area, the number of cases of fungal sepsis caused by *Candida spp.* has shown an important increase and there have been a rise in the number of reports for *Candida krusei* and even cases of *Mucor mycosis*. These patients require long hospitalization, antibiotics and antifungals of the latest generation, placement in ICU, support of vital functions, implantation of devices that expose the patient to lingering infections on implanted material and microfilm. All this leads, not only to an increase in the costs of hospitalization, but as well to a decrease in the quality of life of the patients and their relatives. More rigorous control of infections by raising the awareness of patients and family doctors regarding the rigorous use of antibiotics, as well as the persistent and continuous implication of the hospital epidemiologist and the structure he leads, could limit the expansion of MDR and panresistant bacteria by checking sanitation measures and correct identification, and reporting of HAI. This would contribute to stopping the phenomena of resistance. In the future, we expect that along with MRSA and BGN-ESBL, we will encounter fungus, as well as atypical mycobacteria, which will lead to a new mutation that will have expensive repercussions regarding the first-line

antibiotic-antimycotic-tuberculostatic therapy. All of this will maintain at high levels the consumption of antibiotics and antimycotics of the last generation, with the perpetuation of a vicious circle in terms of multidrug resistance (7, 8).

The prophylactic administration of antibiotics is justified only in special situations, for example in surgical interventions involving the intestinal tract or the repair of traumatic injuries, where the surgical site is contaminated with pathogens (7-9).

The main categories of microorganisms involved in the etiology of HAIs are bacteria (*Clostridioides difficile*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Klebsiella pneumoniae*, *Escherichia coli*), followed by viruses, fungus, and parasites (5). Compared to the general population, hospitalized patients and immunocompromised patients (with neoplasia, diabetes, hemodialysis), are much more susceptible to infections. Many patients have a fragile integumentary barrier (surgical or accidental injuries), which is the main way for germs to enter. The lack of intact skin and mucosal integrity provides easy access to infectious agents (10).

Over the past three decades, CDC data have shown that although overall rates of HAI have decreased, antimicrobial resistance of the pathogens involved, and severity of healthcare-associated infections have increased. Measures to prevent and control infections require a detailed knowledge of the epidemiology of the infection (11).

In conclusion, HAIs remain a tangible contemporary reality in all hospital structures. Patients hospitalized in intensive care units, hematology, and oncology departments, those with immunosuppression, premature, dystrophic, catheterized patients, polytransfused patients, or those with long

hospitalization, are the most exposed to nosocomial risk (12, 13).

The problem of HAI is widely recognized and almost all hospitals now have infection prevention and control programs. Hospitals must have programs that include the prevention and surveillance of HAIs, both in patients and in all medical staff. Therefore, each hospital must develop and implement its own procedures and protocols (9).

Due to technical achievements, including in the medical field, the emergence of new molecules, with a life-saving effect in the context of oncological and non-oncological patients, life expectancy in certain categories of patients, especially immunosuppressed ones, has increased. Infections associated with medical care with atypical mycobacteria and fungous are more common among them.

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