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Topical probiotics in the treatment of infected wounds in critical care☆

Probióticos tópicos en el tratamiento de heridas

Difficult-to-heal and/or infected wounds are frequently encountered in patients in intensive care units. Studies in recent years have proposed the use of topical probiotics to treat wound infections due to their ability to reduce inflammation, lower pH, and release antimicrobial compounds.[1]

The 2019 study by Stanbro et al.[1] investigated the impact of lactobacilli (*Lactobacillus acidophilus*, *Lactobacillus casei* and *Lactobacillus reuteri*) on infected wounds. There were no adverse effects. The results showed that the topical application of *Lactobacillus* was effective against gram-negative multidrug-resistant (MDR) wound pathogens such as *A. baumannii*.

The 2019 article by Venosi et al.[2] presents the case of an 83-year-old woman with critical limb ischaemia and a difficult-to-treat, infected ulcer on her right leg. This patient received complementary treatment in intensive care with local application of probiotic bacteria. During the treatment, progressive healing of the lesion with microbiological resolution of the polymicrobial wound infection was observed. The results seem to confirm the usefulness of complementary probiotic therapy in difficult-to-treat infected wounds.

The 2020 study by Coman et al.[3] evaluated the probiotic efficacy of SynBio (1:1 combination of *Lactobacillus rhamnosus* and *Lactobacillus paracasei*) in counteracting chronic ulcer infections. The results showed that topical probiotics have a good antimicrobial capacity and adhesion percentage to HaCaT cells and fibroblasts was 19% and 17%, respectively, which highlights the possibility of creating a protective environment that prevents pathogens by forming biofilms to counter infections. Therefore, topical probiotics could be used successfully to complement conventional therapies in the treatment of chronic ulcers due to their ability to eliminate pathogenic microorganisms and improve ulcer healing.

The 2019 study by Lenzmeier et al.[4] found that patients with severe burns are susceptible to bacterial infection, which often results in sepsis, organ failure and death. The pathogen *Pseudomonas aeruginosa* (*P. aeruginosa*), an organism that is inherently resistant to multiple antibiotics, is a common cause of sepsis in critical patients. Therefore, it is essential to develop a topical treatment unrelated to conventional antibiotics for the prevention of *P. aeruginosa* infection. This study examines the effectiveness of a concentrated supernatant from *Lactobacillus gasseri* in inhibiting *P. aeruginosa* biofilms and reducing wound bioburden and sepsis. The results showed that probiotics inhibited *P. aeruginosa* growth, prevented biofilm development, and eliminated partially developed biofilms, reduced mortality and prevented systemic spread. Their results suggest the potential of topical probiotics in preventing sepsis from infection in critical burns patients and immunocompromised patients.

The 2016 study by Argenta et al.[5] analysed the efficacy of probiotics (*Lactobacillus plantarum*) in severe burns. The results showed that probiotics inhibited septicaemic accumulation of the pathogen in remote organs. In addition, probiotic therapy successfully suppressed infection-dependent induction of TNF-α and interleukins 6 and 10 in the liver. Topical probiotics show great potential as complementary treatment of complicated burns.

The potential of topical probiotics on infected wounds in critical patients can be proven through the analysis of the abovementioned recent studies. Moreover, as this treatment accelerates healing, it could reduce the costs of treating infected wounds and increase the quality of life of critical patients.

However, it is worth noting that although the evidence reviewed appears to indicate that we can expect positive results from topical probiotics, the few human studies are not sufficient to establish a general recommendation. More studies are needed to assess the efficacy and possible complications of this treatment in a larger sample of patients, and to analyse its effect in combination with other treatments. Thus, we can offer patients the best care based on the latest evidence.

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Monitoring of patients in Intensive Critical Care Units: What should we do and what are we doing?☆

Monitorización de pacientes en Unidades de Cuidados Intensivos: qué deberíamos hacer y qué estamos haciendo?

Among the publications of the most widely read journal, it is interesting to find articles on the monitoring of patients in intensive care units such as ''hemodynamic monitoring: the PiCCO®system'' by Martín Vivas et al.,[1] ''The role of nurses in Swan-Ganz catheter management'', by Casado Dones and Casado Dones,[2] ''The monitoring of the patient on mechanic ventilation'' by Bazan et al.[3] and ''The monitoring of deep sedation: the BIS®monitor'' by Saboya Sánchez et al.,[4] among others. These studies suggest the importance of a continuing education plan related to this subject and also the need to promote spaces in our clinical practice where direct care is identified in continuous monitoring and quality for critically ill patients.

This relationship between what we should do and the promotion of scenarios where we can actually achieve this has aroused a debate around what an intensive care nurse does. This forms part of the Nursing Now campaign, the goal of which is to improve health worldwide, through enhancing and fortifying the profile and status of nurses throughout the world. In this sense, it has already been extensive stated that the role of our discipline in intensive care units (ICUs) in advanced practice has direct impact on the quality of care, improves patient outcomes and also achieves the transformation of health services through the effective use of the labour force. This could alleviate the imminent increase in the demand for healthcare services.[5]

Continuous monitoring is highly relevant for intensive care nurses and many pre and postgraduate training programmes emphasise this type of activity as the essential pillar for care of the critically ill patient. But, how long do we have to monitor our patients? Several authors have described the specific activities carried out by ICU nurses. These include both administrative and procedural tasks and educational activities. This setting poses challenges for the nurse in terms of the compliance of objectives in keeping with the hours available to achieve them. Several studies have described that monitoring becomes second place, being displaced by administrative activities even when the critical condition of the patients is high, as found by Valls-Matarín et al. in Spain in a 2015 publication in this same journal.[6] This situation was similar in several countries such as Brazil, where several tasks such as ''documentation'' were the ones most frequently undertaken, according to Santos de Campos et al. in his 2018 study.[7] Greater dedication to another type of basic care like that mentioned by Carmona-Monge et al. has also been described, where the patient's personal hygiene activities took up most of the nurse's time.[8]

Although as nurses we have demonstrated the importance of our role in monitoring patients in the ICU, certain challenges continue existing, such as work overload, limited access to technology and inefficient health systems.[9] An awareness of the outcomes of the application of the best available evidence in monitoring critically ill patients, may also benefit our nursing discipline through the recognition and grading of our role in the ICU.

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