

## Blood-borne infections in hemodialysis patients

### *Infecciones del torrente circulatorio en pacientes en hemodiálisis*

One of the most important and feared complications that we face with our hemodialysis patients, both in renal units and in intensive care units, are bacteremias, related, mostly, with the use of intravascular catheters (90 % of the bacteremias correspond to patients on hemodialysis). This fact is associated with high mortality: it is the second leading cause of death after cardiovascular disease and an important cause of hospitalization. Despite this, the use of temporary and permanent catheters in hemodialysis patients has not decreased in the last years. Even, according to data of the High Cost Account, the use of hemodialysis catheters raised from 26.5 % in the year 2015 to 27.3 % in 2016 (5,294 patients with catheter of the 19,388 patients reported for the year 2016).

In Colombia, large epidemiological studies that allow us to know the behavior of these infections, their etiologic agents and the number of episodes per every 1,000 patient-catheter-days are required. There are no currently initiatives for the development of guidelines on this subject by the Ministry of Health. There are only local efforts of some service providers.

The recommendations to minimize the risk of catheter-related infections include monthly monitoring of bacteremias in hemodialysis patients, sterile technique in the sterilization prior to the manipulation of catheters in dialysis and the registry of the infection rates (which should be lower than 1.6 episodes for every 1,000 days-catheter—for tunneled catheters—and lower than 4.6 episodes per every 1,000 days catheter—for temporary catheters).

The expertise of the physician is essential to prevent complications during the implantation of these elements. Some authors recommend that the nephrologist, in his training stage, should implant at least 50 catheters and continue with a mean of 30 annual catheters to maintain the expertise. These catheters should ideally be implanted using ultrasound guidance.

Patient education is vital to reduce the rate of infections. This includes taking care of the vascular access, hand hygiene, risks associated with the vascular catheter, early recognition of the signs of infection, prophylaxis of the outlet port of the catheter with topical antibiotics, among others. However, the main intervention is to be able to reduce the number of vascular catheters, implementing the confection of definitive vascular accesses in the patients before starting therapy, a measure that has not been possible to achieve by some insurers.

In addition to catheter-associated bacteremias, attention should be paid to the bacteremias generated by unusual germs, often associated with the contamination of supplies related with hemodialysis therapy (among which are included heparin solutions, distilled water, circuit lines, water plants, etc.). These germs have a different epidemiological approach and it is necessary to be clear in their diagnostic approach in order to proceed properly.

In summary, bloodstream infections in patients on hemodialysis therapies are a serious complication associated with high mortality and morbidity. This compels to implement, by the Colombian Association of Nephrology and the Ministry of Health and Social Protection, guidelines for the prevention and management of this pathology, both in our renal units and in the intensive care units. In addition, it implies to promote among the insurers the early confection of arteriovenous fistulas in patients undergoing hemodialysis. These measures will help to lessen, to a large extent, the burden of related morbidity and mortality and to reduce costs to the healthcare system.

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