TITLE: PERSISTENCE OF *PSEUDOMONAS AERUGINOSA* IN WATER OF HEMODIALYSIS, RELATED TO BACTEREMIA IN PATIENTS WITH CHRONIC RENAL INSUFFICIENCY.

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ABSTRACT:

Hemodialysis is the most widely treatment used in patients with chronic or acute renal failure. In Brazil, 90% of these patients depend on this procedure to remove metabolic degradation products, excess of water and minerals from the body, in order to restore acid-base and electrolyte balance. Among the bacteria frequently associated with bacteremia in these patients, we can highlight *Pseudomonas aeruginosa*, an important opportunistic pathogen in hospital environments, causing several human infections. *P. aeruginosa* has a great ability to produce biofilm, facilitating its colonization in catheters, machines and in the hemodialysis water reuse system. However, it is not known if the contamination comes from the patients themselves or if a hospital infection occurred due to contact with the contaminated water. The aim of this study was to analyze the biofilm production by *P. aeruginosa* strains, which would allow its permanence in the environment and to verify if the strains belong to the same clone. Six strains of *P. aeruginosa* were selected in a 6-month data collection (from dec. 2015 to may. 2016). The strains were isolated from the water in a Hemodialysis Unit of a public hospital in Botucatu, SP, Brazil. Simultaneously with the data collection, we chose six patients at the public hospital had bacteremia and the same bacteria was isolated from their blood. In order to observe the biofilm production, an assay using a 96-well microplate test with incubation time of 48h / 35 ° C was performed and the result was read using the ELISA reader at 540 nm using a positive control, ATCC 27853. By Pulsed-Field Gel Electrophoresis (PFGE), we analyzed whether the strains isolated from the patients were the same strains that contaminated the water. Among the 12 strains analyzed, 11 (91.7%) were biofilm producers, which could lead to persistence of the bacteria in the environment. According to the results of PFGE, three strains from patients presented the same the clonal profile among themselves, but were not correlated with strains isolated from water, inferring that the origin of the contamination is not known. On the other hand, three strains isolated from water, in five months, had a high index of similarity between them, but they did not correlate with strains isolated from patients. It is extremely important to trace the quality of water and the environment in a hemodialysis unit, aiming to improve the quality of life of chronic renal patients.

Keywords: *Pseudomonas aeruginosa*, hemodialysis, biofilm, water, clone.

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