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INTRODUCTION

It is a standard procedure for humans undergoing continuous renal replacement therapy (CRRT) to reconnect the patient to a recirculated saline circuit, from which they were disconnected, in order to perform diagnostic test. This strategy could be an option in veterinary patients. The purpose of this study is to investigate the sterility of recirculated saline in CRRT platforms.

METHODS

Prior to starting extracorporeal renal therapy, a blood sample was taken from the patient's vascular access as part of the AKI diagnostic procedure. After CRRT was completed, the circuit was exposed to five rinses using a one-liter bottle of SSF 0.9% and platform (Aquarius Nikkiso® and Aquarius Nikkiso Plus®) was placed in recirculation mode (Fig n°1). After cleaning the sampling port of the access line with alcohol, a recirculated saline sample was drawn at 24 and 48 hours recirculation. All samples were placed in culture bottles (Signal blood culture system Oxoid®, Fig n°2) and incubated. Positive samples were cultured for organism identification and susceptibility testing. No cartridge was reused. Categories with $n < 5$ were compared by Fisher's exact test. Significance was set at $p < 0.05$.

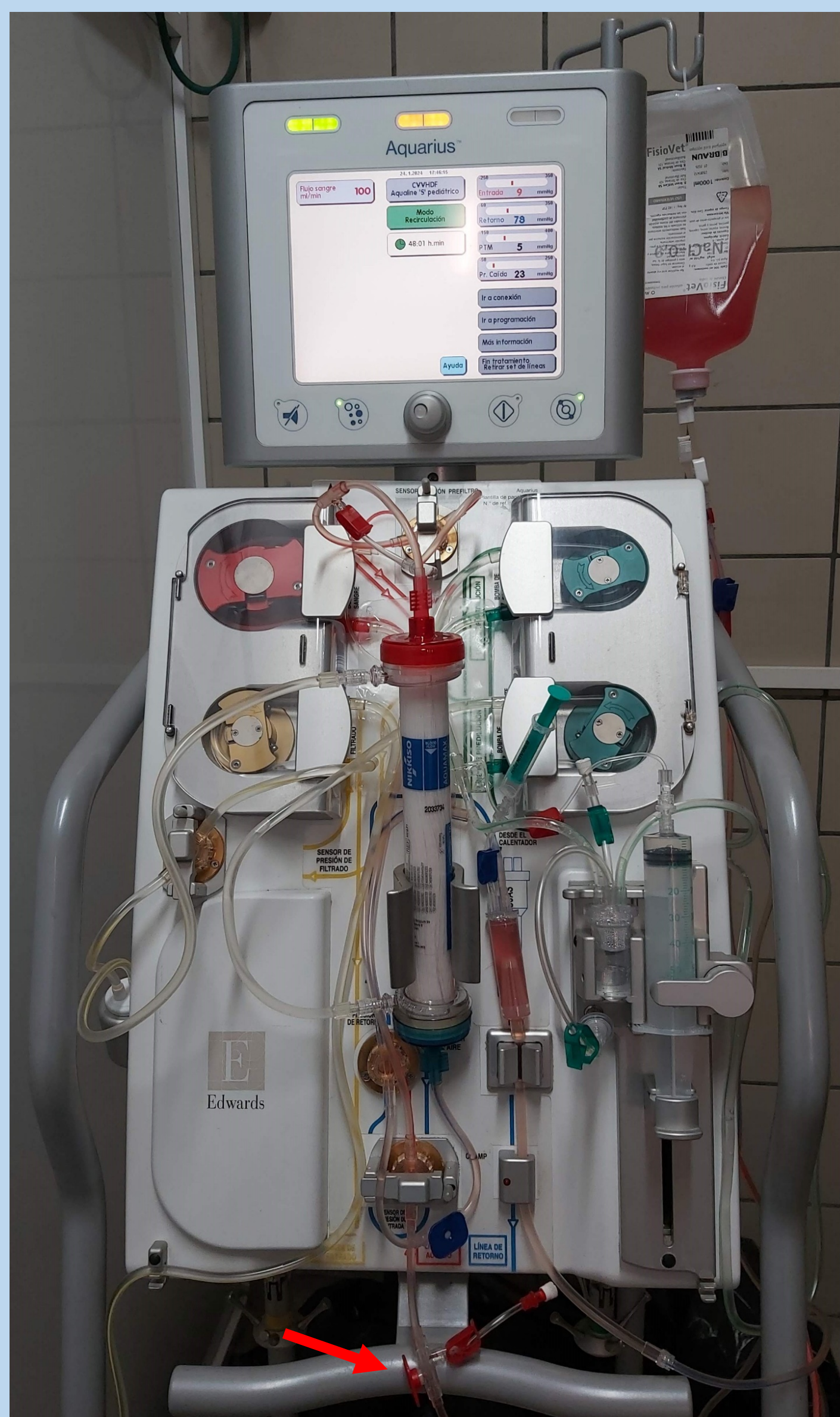


Fig n°1: Aquarius Nikkiso® platform at 48 h of recirculation. Sampling port (red arrow).

Fig n°2: Signal blood culture system Oxoid®. A positive blood culture, indicating growth of micro-organisms is recognised by the appearance of the blood/broth mixture in the transparent growth indicator device above the level of the locking sleeve (red square bracket).



RESULTS

In this prospective study, 42 samples were cultured [14 from blood and 28 from recirculating saline samples (14 at 24h and 14 at 48h)]. Bacterial growth was obtained from 1 blood sample (7.1%) and 7 saline samples (28.5 % at 24h and 21.4% at 48h). Bacteria of the genus *Streptococcus* (n=1), *Pseudomona* (n=2), *Enterococcus* (n=1) and *Serratia* (n=2) were isolated (Table n°1). The only positive blood sample (*Klebsiella pneumoniae*) resulted in a positive growth at 24 and 48 h. No association was observed between positive blood and cartridge cultures (blood vs 24 h recirculation, $p= 0.286$; blood vs 48h recirculation, $p= 0.214$; 24h vs 48h recirculation, $p= 0.176$).

Table n°1: Culture results

	Blood culture	Cartridge cultures 24h after recirculation	Cartridge cultures 48 h after recirculation
Case n°1	Negative	Negative	Negative
Case n°2	Negative	Negative	<i>Serratia marcescens</i>
Case n°3	Negative	Negative	Negative
Case n°4	Negative	<i>Streptococcus dys equisimilis</i>	Negative
Case n°5	Negative	<i>Pseudomonas aeruginosa</i>	<i>Pseudomonas aeruginosa</i>
Case n°6	Negative	Negative	Negative
Case n°7	Negative	Negative	Negative
Case n°8	Negative	Negative	Negative
Case n°9	Negative	Negative	Negative
Case n°10	<i>Klebsiella pne.pneumoniae</i>	<i>Serratia marcus</i>	<i>Klebsiella pne.pneumoniae</i>
Case n°11	Negative	Negative	Negative
Case n°12	Negative	<i>Enterococcus faecalis</i>	Negative
Case n°13	Negative	Negative	Negative
Case n°14	Negative	Negative	Negative

CONCLUSIONS

This study demonstrated bacterial growth in saline after 24 and 48 h of recirculation. By acting as a culture medium, blood kept in the circuit can enhance the growth of germs. These bacteria may come from patients or from contamination of the circuit during handling. Based on our results, we cannot recommend reusing lines and hemofilters in patients undergoing extracorporeal purification techniques.

BIBLIOGRAPHY

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