NEW ROLE OF PERITONEAL CELL-FREE DNA FOR MANAGMENT IN PD-RELATED PERITONITIS

Grazia Maria Virzì [1] *, Sabrina Milan Manani [1] , Alessandra Brocca [1] , Massimo de Cal [1], Ilaria Tantillo [1], Carlo Crepaldi [1] and Claudio Ronco [1].
[1]IRRIV-International Renal Research Institute Vicenza; [2]Department of Nephrology, Dialysis and Transplantation, San Bortolo Hospital, Italy

Background

Peritonitis and exit site infections are the major complications of PD and remains the major cause of switch from HD. Severe or repeated episodes of peritonitis cause long-term complications, such as changes in membrane permeability and sclerosing peritonitis, that potentially lead to peritoneal membrane failure Cell-free DNA (cfDNA) is a circulating extracellular DNA fragment and originates from necrotic and apoptotic cells derived from inflammation and tissue damage. cfDNA is present in the peritoneal effluent of stable PD patients. However, there is no data on cfDNA in peritoneal effluent in PD patients with peritonitis .

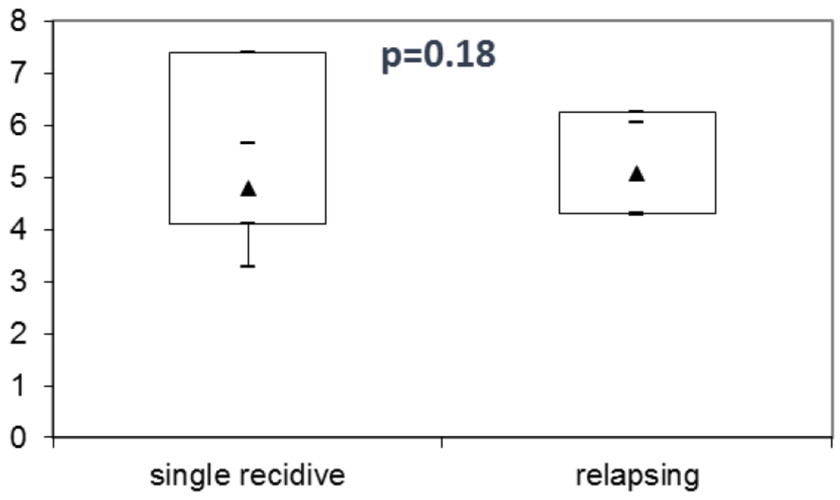
Aim

In this study, we investigated the role of peritoneal cell-free DNA (cfDNA) and its association with peritonitis

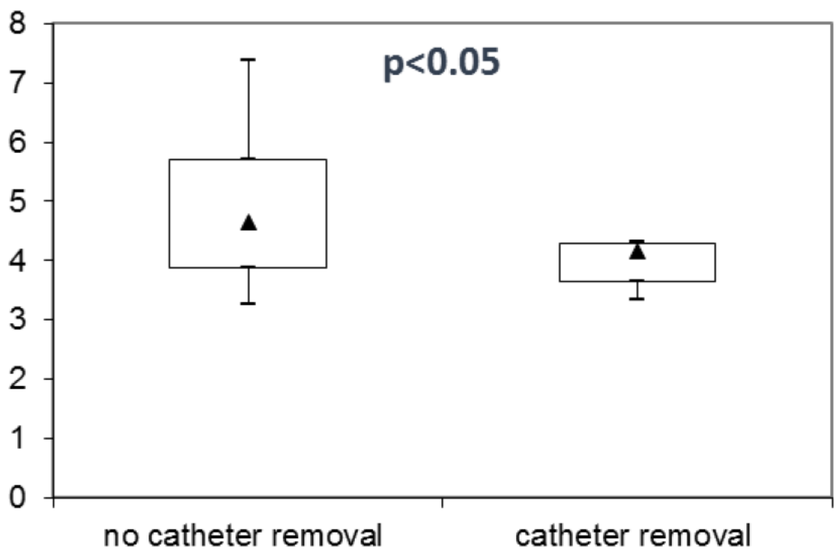
Methods

We enrolled 23 PD patients with peritonitis and without any history of systemic inflammation (14 males, mean age: 68±16yrs). cfDNA was extracted from peritoneal effluent and was quantified by Real time PCR in Genome Equivalent (GE)/ml for β-globin gene (housekeeping gene, present in all human nucleated cells), in triplicate.

RECIDIVE



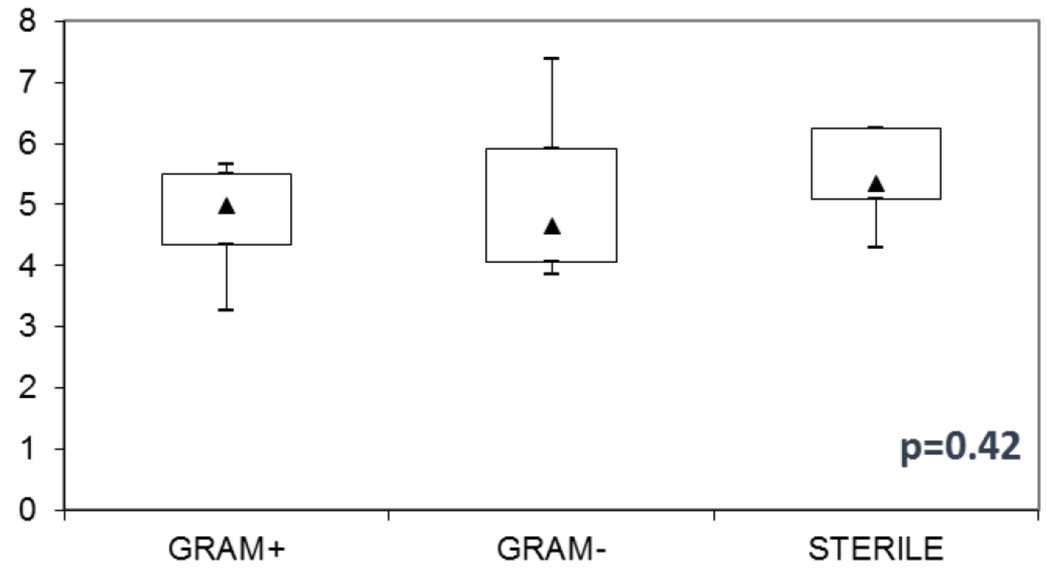
CATHETER REMOVAL



Results

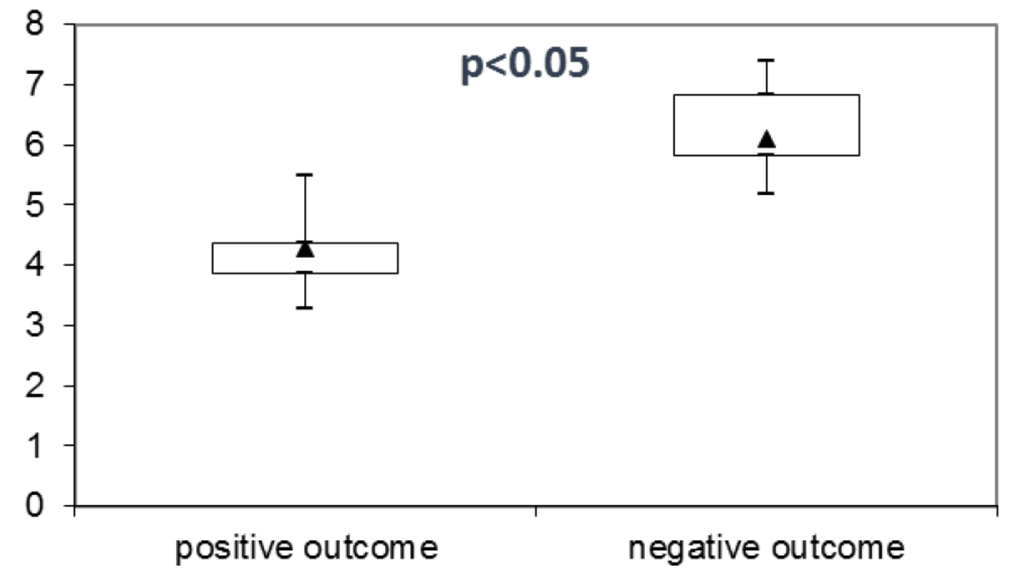
All patients were treated and clinically recovered from peritonitis in 13.5±5.4 days. 18/23 patients had a first episode of peritonitis and responded to first-line antibiotics (65% Gram+, 22% Gram-and 13% sterile), whereas 5/23 had a relapsing episode of peritonitis (responded to other course of intra-peritoneal antibiotics).

TYPE OF PERITONITIS



There was no difference in cfDNA levels between Gram+/Gram- peritonitis, patients with single episode and relapsing peritonitis, but there was a significantly difference in cfDNA between PD patients with positive and negative outcomes (n=4), defined as death (p<0.05).
DNA showed significantly higher levels in 3 patients required catheter removal (p<0.05). There was no difference in cfDNA levels between PD patients with a negative history of previous peritonitis (n=3) and PD patients with a positive history (n=20) (p=0.48); there was no statistically significant correlation between cfDNA and number of previous peritonitis (rho=0.13, p=0.55).

OUTCOME



Doctor Grazia Maria Virzì
graziamaria.virzi@gmail.com

Conclusions

This pilot study provided substantial basis for further investigations of molecular mechanisms of peritoneal injury and potential clinical application of cfDNA. cfDNA could provide some additional information about patients outcome and management. these results can be considered hypothesis generating, and stimulate further exploration of a prognostic and predictive role of cfDNA in PD-related peritonitis.

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Dialysis. Peritoneal dialysis.
Grazia Maria
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