Dialysis vintage influences Twist and N-cadherin expression in *ex vivo* mesothelial cells

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Introduction

PD is an alternative to treat end-stage renal disease patients
Krediet, Kidney Int, 1999

Exposure to high osmotic pressure and bioincompatible dialysis fluids injuries the peritoneum, which progressively becomes denuded of mesothelial cells and undergoes fibrosis
Chaimovitz; Kidney Int, 1994

Fibrosis and angiogenesis of the peritoneal tissues impact negatively on the functional characteristics of this membrane
Yañez-Mo, NEJM, 2003

Overexpression of Snail, Twist and N-cadherin as well as underexpression of E-cadherin have been implicated as induction signal of epithelial-to-mesenchymal transition
Cuixiang, NDT, 2012

Objectives

1. Primary end-point
To analyse Snail,Twist, E-cadherin and N-cadherin expression in a cohort of PD patients in PD

2. Secondary end-points
To investigate possible correlations between its expression and epidemiological and clinical data

Methods

Effluent-derived mesothelial cells were isolated from stable PD patients by centrifugation of the samples; later they were fixated in alcohol and dried

Expression of Snail,Twist and Cadherins was investigated by immunohistochemistry using monoclonal antibodies

Snail and Twist immunostaining was evaluated attending to the nuclear signal and Cadherins immunostaining attending to the membrane signal

According to the protein expression levels the specimens were classified by the pathologist

Immunostaining intensity and the percentage of positive cells were took into account to elaborate a score

Methods

Study population

41 patients; CKD 5D, in Peritoneal dialysis
Stables
> 18 years
3 months in dialysis

Mesothelial cells were obteined from 32 patients

Results

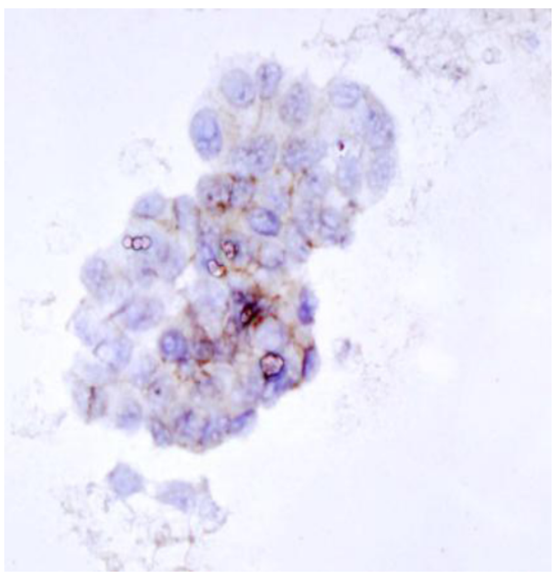
No relationships were found between isolation of mesothelial cells and patients characteristics

Snail expression	Twist expression	E-cadherin expression	N-cadherin expression
5 patients	16 patients	9 patients	22 patients
26%	59%	30%	81%

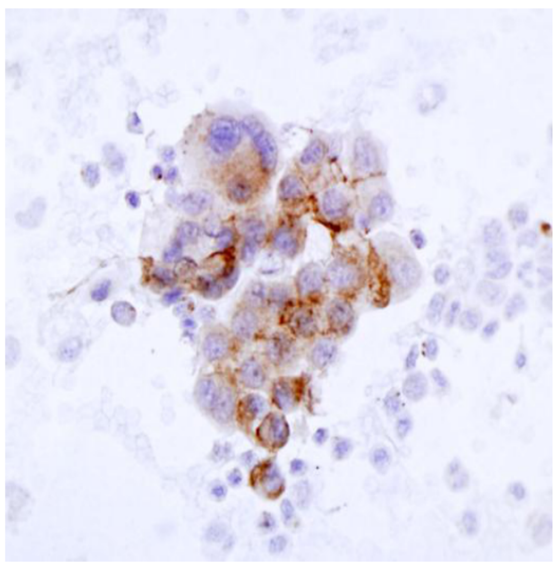
Patients characteristics

N	32
Age (years)	57 ± 11
Gender (%males)	56
Renal disease (%)	
- CGN	22
- Diabetic N.	18
- PQ	13
- Isquemic N.	9
- Interstitial N.	9
- Others	29
Time in tecnique (months)	23 ± 12

Immunostaining



Twist



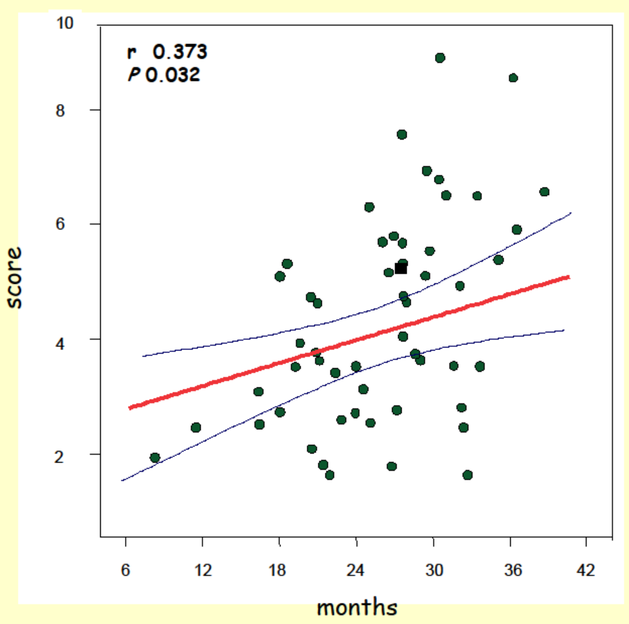
N-cadherin

Predictors of treatment response

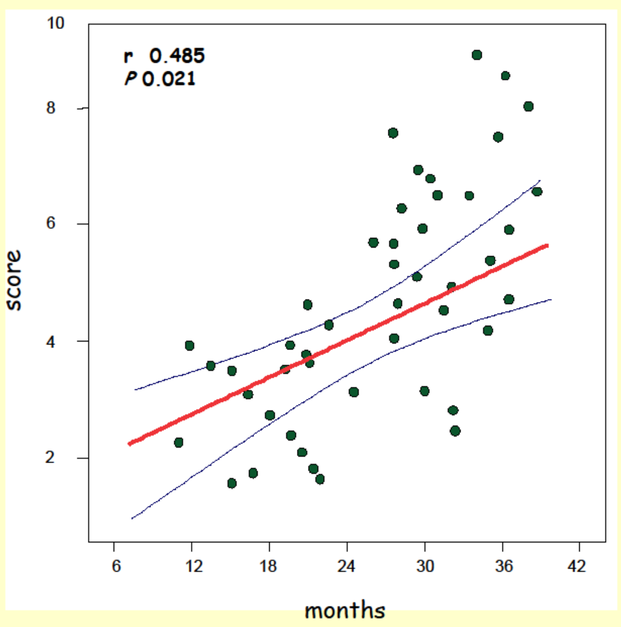
Linear regression

- dependent variable:
  Twist and N-cadherin expression
- independent variables:
  - demographics
  - clinical data
  - number of peritonitis
  - time on PD

Twist expression



N-cadherin expression



Conclusions

In PD patients

It is possible to obtain *ex vivo* mesothelial cells from peritoneal dialysis efluent

We can also analyse the expression of transcription factors and cadherins

Snail and E-cahderin expression was present in a small number of patients and no correlations were found

Twist and N-cadherin expresion was frecuently found; longer dialysis vintage was associated with an increase in their expression

These results suggest that the longest the peritoneum is exposed to dialysis fluids the highest risk to develop epithelial-to-mesenchymal transition

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