False-positive results of cancer antigens as a result of ascites in severe nephrotic syndrome?

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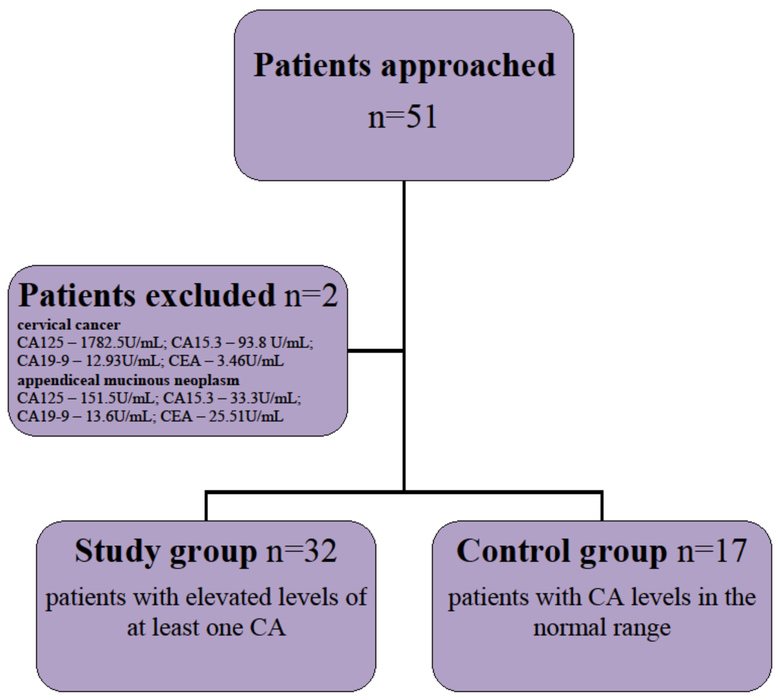
INTRODUCTION AND AIM

The first onset of glomerulonephritis (GN) in adult patients may be related to underlying malignancy, therefore the screening for solid organ neoplasms, as well as hematologic disorders, should be performed before or simultaneously with the kidney biopsy. However, Cancer Antigens (CA) may be produced by normal epithelial cells of peritoneum stimulated by the presence of ascites in the course of nephrotic syndrome (NS).

The aim of this study was to evaluate the significance of elevated serum CA in patients with NS in the single centre.

METHODS

The retrospective study included 51 female patients, aged 34-86 years, with diagnosed GN between January 2009 and March 2014. The biomarkers of disease activity (daily proteinuria, serum protein and albumin concentrations) and levels of CA (including cancer antigens – 125, 15.3, 19-9 and carcinoembryonic antigen – CEA) were measured using commercially available tests.



CA125 levels were elevated in 30/32 (93.8%) of patients in the study group and 16/32 (50%) patients had elevated more than one CA. The diagnostic imaging including transvaginal ultrasonography, computer tomography or magnetic resonance of the abdomen and pelvis did not reveal any changes in abdominal or pelvic organs (except ascites in 15 patients). The diagnosis of glomerulonephritis was confirmed by kidney biopsy in 19/32 (59.4%) cases. Membranous GN was the most common type (6), followed by focal segmental glomerulosclerosis (3), IgA nephropathy (3), lupus nephritis (3), mesangioproliferative GN (2) and amyloidosis (2).

RESULTS

The severity of NS was higher in patients with elevated levels of CA as compared to control group (Table 1).

Table 1 Cancer antigens and severity of nephrotic syndrome in study and control groups

Group	Study group	Control group	p value
CA125 [U/mL]	287.5±335.9	16.3±7.3	**<0.001**
CA15.3 [U/mL]	33.5±16.8	18.9±6.8	**0.007**
CA19-9 [U/mL]	32.0±42.3	16.9±28.1	0.39
CEA [U/mL]	7.4±21.9	1.8±1.2	0.18
proteinuria [g/24hours]	6.9±5.6	1.8±2.6	**<0.001**
protein [mg/dl	4.6±1.1	6.2±1.1	**<0.001**
albumin [mg/dl	2.2±0.8	3.4±0.8	**<0.001**

Significantly higher levels of CA125 were present in patients with ascites 462.8±403.4U/mL (median 424.8) as compared to patients without ascites 74.5±119.2U/mL (median 26.4), p<0.001 (Figure 1).

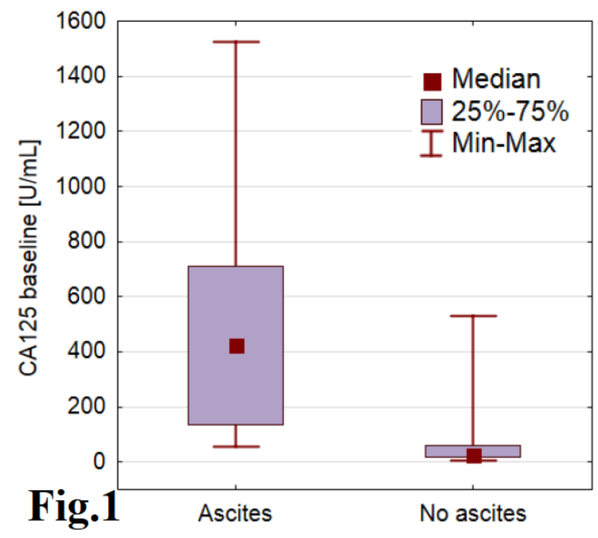


Fig.1

Moreover, the significant decrease in CA125 (287.5±335.9U/mL, median 139.2 vs 101.9±173.8U/mL, median 35.6U/mL, p<0.001, Figure 2) and CA15.3 (33.5±16.8U/mL, median 26.4 vs 24.4±13.9U/mL, median 22.1 p=0.01, Figure 3) concentrations in the course of immunosuppressive treatment was observed with involution of ascites confirmed in control diagnostic imaging. However, there was no decrease in CA125 levels in 3 patients without the remission of nephrotic syndrome and with persistent ascites.

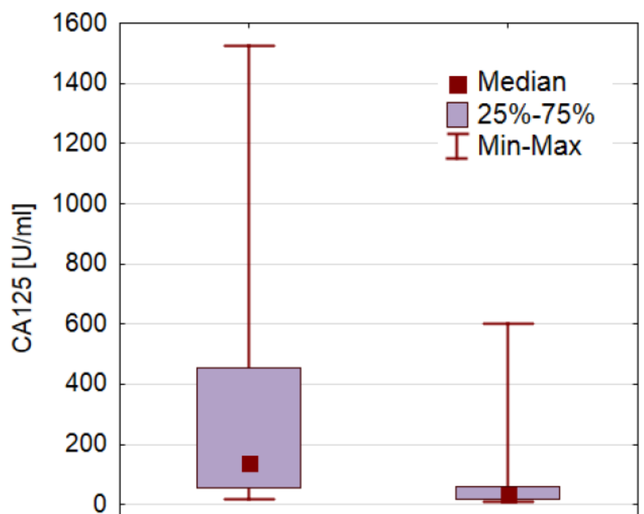


Fig.2

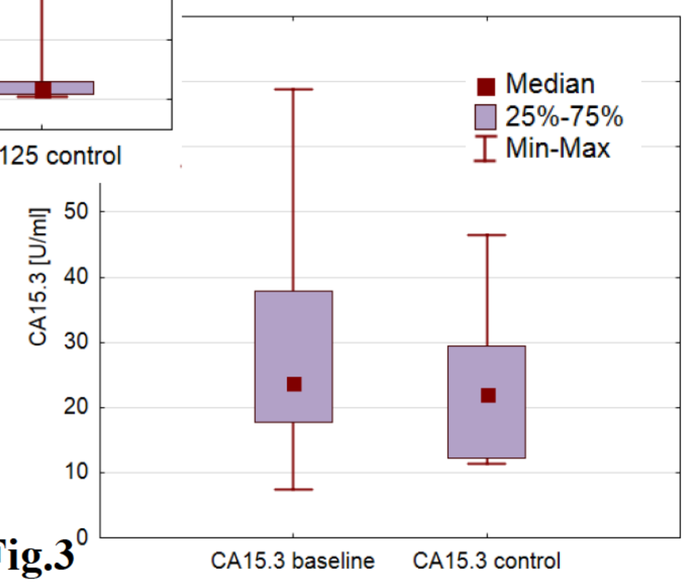


Fig.3

CONCLUSIONS

Significant decrease of elevated levels of cancer antigens during treatment corresponding to involution of ascites suggest that CA are not specific for neoplasms and may be resulted from stimulation of their production by peritoneal cells in severe nephrotic syndrome. Therefore recovery from NS is associated with significant lowering of CA125. However, the cancer awareness and the differential diagnosis of malignancy should always be considered.

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