

## Association between inflammation index and nutritional status and the effectiveness of immunotherapy in NSCLC treatment

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### BACKGROUND

Immunotherapy is an important therapeutic strategy for NSCLC, but only about 20% of patients had benefit<sup>1</sup>. To identify predictive markers is crucial for a proper patient selection. Few trials assessed the correlation between nutritional/ inflammation status and the effectiveness of immunotherapy.

### METHODS

A retrospective trial included patients (pts) with metastatic lung adenocarcinoma treated with immunotherapy from June 2017 to October 2019. We evaluated the following parameters: body mass index, weight loss, body composition by BIVA and computed tomography (CT) at L3-L4, C-reactive protein (CRP), albumin, hemoglobin, absolute lymphocytes count, patient performance status (PS), anorexia and quality of life (by miniCASCO questionnaire). Clinical response (CR) according to RECIST criteria, overall survival and progression-free survival (PFS) were assessed. All pts were evaluated every 4-6 months.

miniCASCO score	25,32 ± 10,3
BWC	5+5 ± 4,5
IMD	6,4 ± 3,2
PHP	10,6 ± 4,1
ANO	3,7 ± 1,9
QoL	9,1 ± 3,6

Tab 2. miniCASCO score at baseline.

Charateristics	N° Pts(%)
	18
Male	12(66,6%)
Female	6(33,3%)
Age	70,9 ± 11,8 (50 - 86)
Weight	64,5 ± 12,9 (42-95)
Height	162,5 ± 8,6 (143-175)
Stage disease	IV
	18 (100%)
Histology	Adenocarcinoma
	15(83,3%)
	Squamous cell
	3 (16,7%)
Treatment	Nivolumab
	12 (66,6%)
	Pembrolizumab
	6 (33,3%)
PS- ECOG	0
	1(5,5%)
	1
	8(44,5%)
	2
	9 (50%)

Tab 1. Charateristics patients at baseline

Tab 3. Correlation between baseline parameters and PFS

	r	CI 95%	p
Albumin	0,2629	-0,2493 to 0,6601	0,308
Anorexia	0,1359	-0,3534 to 0,5668	0,5909
CRP	-0,7304	-0,8928 to -0,3999	0,0006
Hemoglobin	0,1252	-0,3629 to 0,5594	0,6205
Lymphocytes	-0,05657	-0,5100 to 0,4214	0,8236
SMI	0,8229	0,2119 to 0,6623	0,0255
PS	-0,5101	-0,7890 to -0,05667	0,0306
QoL	-0,2534	-0,6441 to 0,2421	0,3103

### RESULTS

We included 18 patients. CR significantly correlated with CRP ( $r = 0.4943$ ; CI95% 0.05164-0.7746;  $p=0.0315$ ) and muscle mass index (MMI) calculated by CT at baseline ( $r = 0.4955$ ; CI95% 0.05328- 0.7752;  $p=0.031$ ). We also found a significant correlation between PFS and CRP ( $r = -0.7304$ ; CI95% -0, 8928 to -0.3999;  $p = 0.0006$ ), MMI ( $r = 0.8229$ ; CI95% 0.2119-0.6623;  $p = 0.0255$ ) and PS at baseline ( $r = -0.5101$ ; CI95% -0.7890 to -0.05667;  $p = 0.0306$ ). Additionally, OS correlated significantly with baseline CRP ( $r = -0.6637$ ; CI95% -0.8631 to -0.2851;  $p = 0.0027$ ) and MMI at CT ( $r = 0.584$ ; CI95% -0.2370 -0.6472;  $p = 0.0304$ ). At multivariate analysis CRP was an independent predictive factor of clinical response ( $p = 0.0213$ ), PFS ( $p = 0.0006$ ) and OS ( $p = 0.0027$ ). The miniCASCO correlated positively with PS ( $r = 0.567$ ;  $p = 0.036$ ) and negatively with CR ( $r = -0.438$ ;  $p = 0.010$ ). Moreover, patients with partial response and stable disease had a significant decrease of CRP and a significant increase of MMI and hemoglobin compared to pts with progressive disease.

### CONCLUSIONS

Our results showed, even in a limited sample size, the negative correlation of inflammation and poor nutritional status with clinical response and survival in NSCLC pts treated with immunotherapy. Blocking inflammation and the related nutritional impairment may be crucial in improving efficacy of immunotherapy in advanced lung cancer pts.

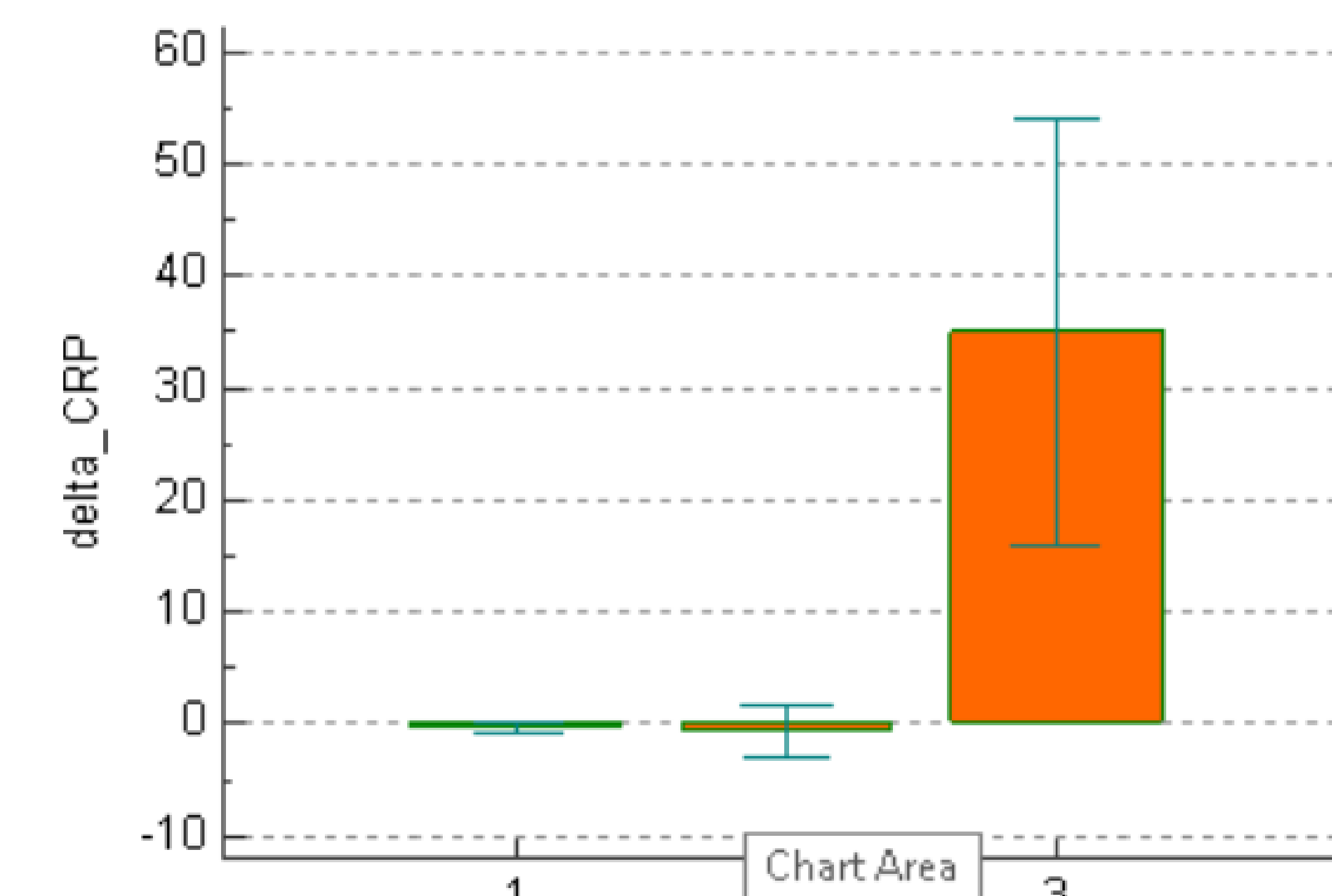


Fig.1 . Variation in CRP values based on clinical response.  $p = 0.008$  according to ANOVA test.  
Legend. 1, patients in clinical response, 2, patients in stable disease, 3 patients in disease progression

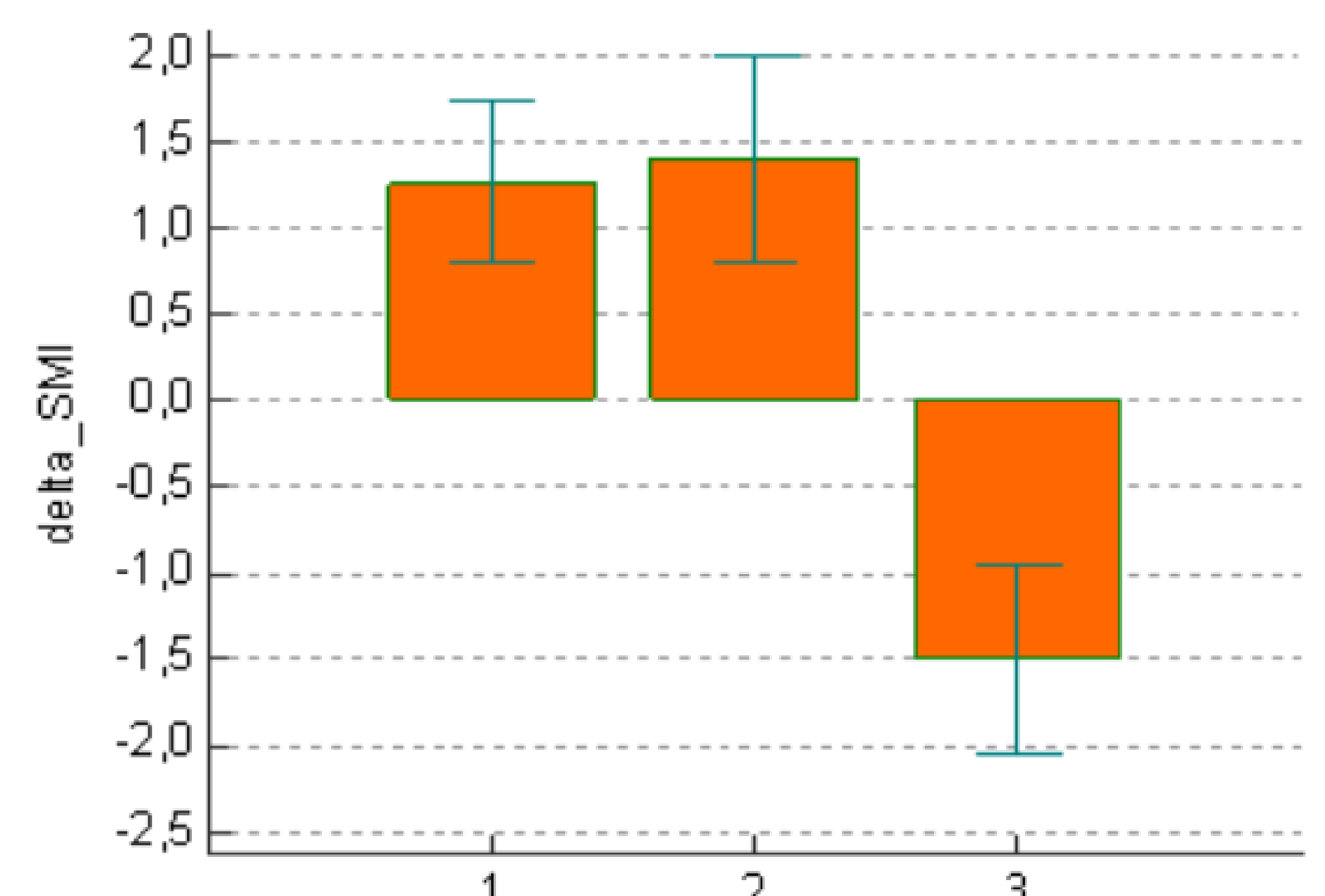


Figure 2. Vvariation in muscle mass based on clinical response.  $p = 0.003$  according to ANOVA test.  
Legend. 1, patients in clinical response, 2, patients in stable disease, 3 patients in disease progression.

### BIBLIOGRAPHY

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Conflicts of interests of S.Tolu: Nothing to declare