Póster Nº 31

Microbiome Analysis Predicts Neoadjuvant Treatment Outcomes with Chemo-Immunotherapy in Resectable NSCLC

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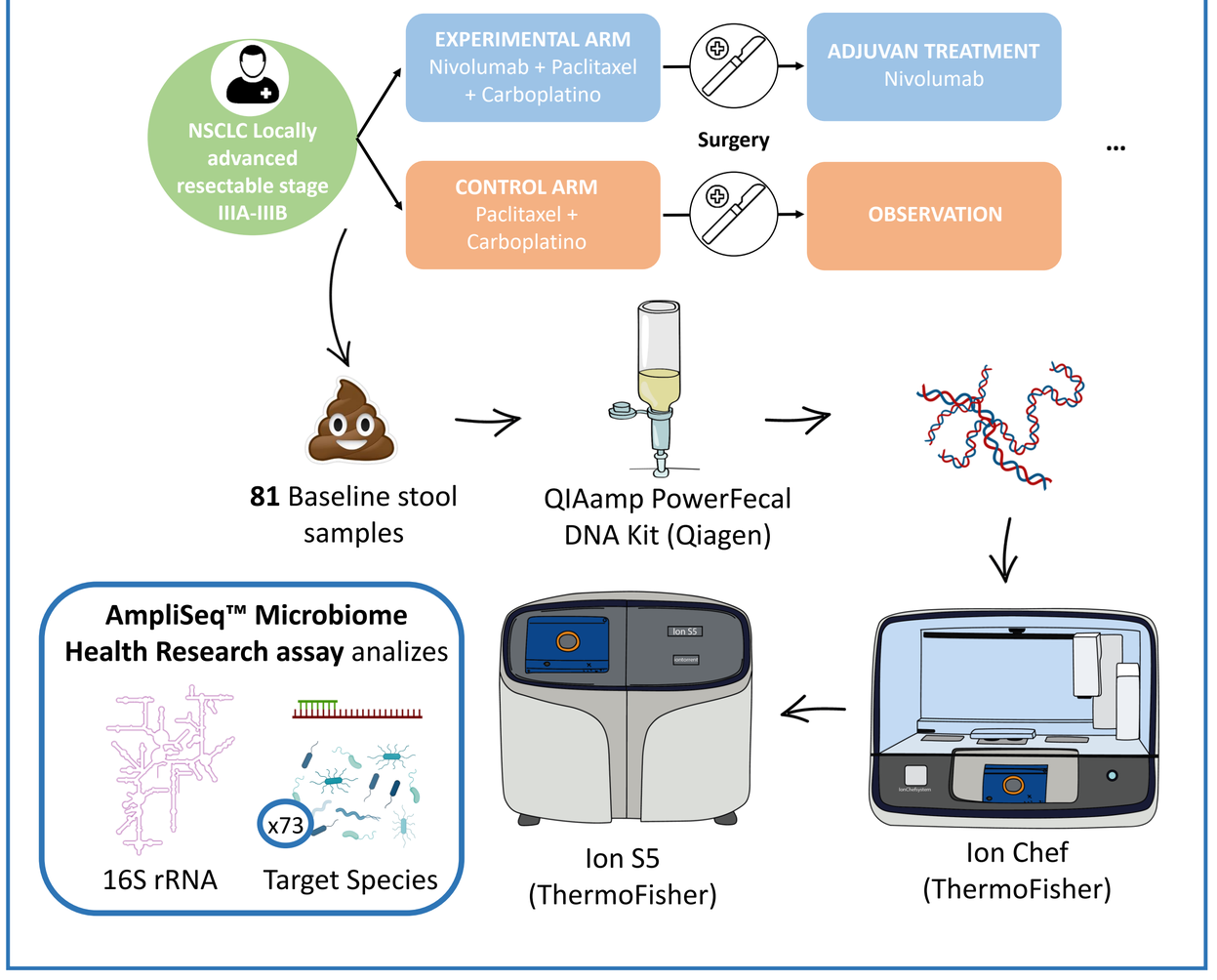
OBJETIVOS

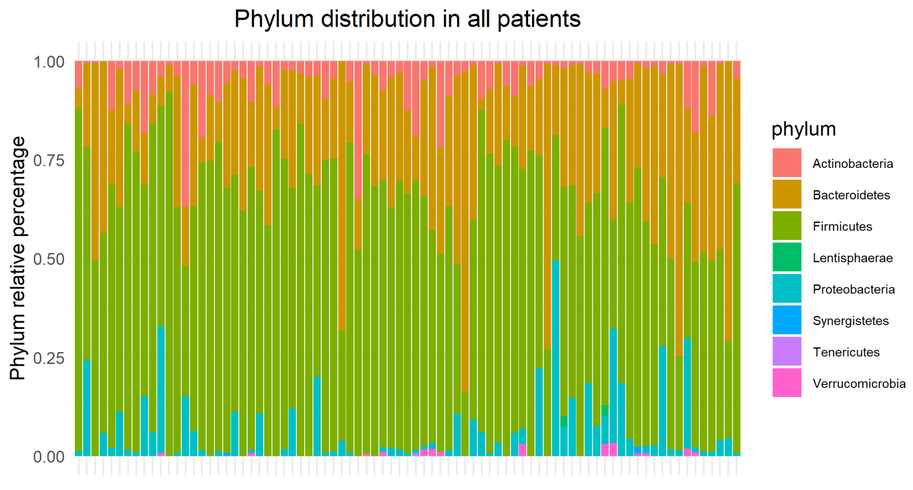
This study explores the potential of predicting treatment effectiveness in patients with non-small cell lung cancer (NSCLC) by analyzing fecal microbiome using stool samples collected before neoadjuvant treatment with nivolumab and platinum-based chemotherapy.

PATIENTS AND METHODS

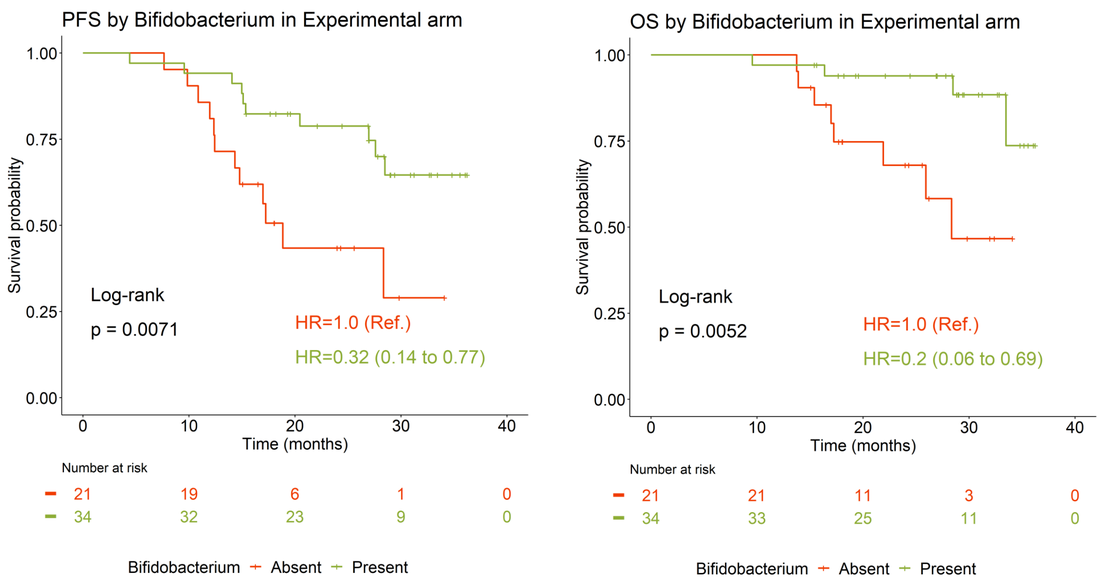


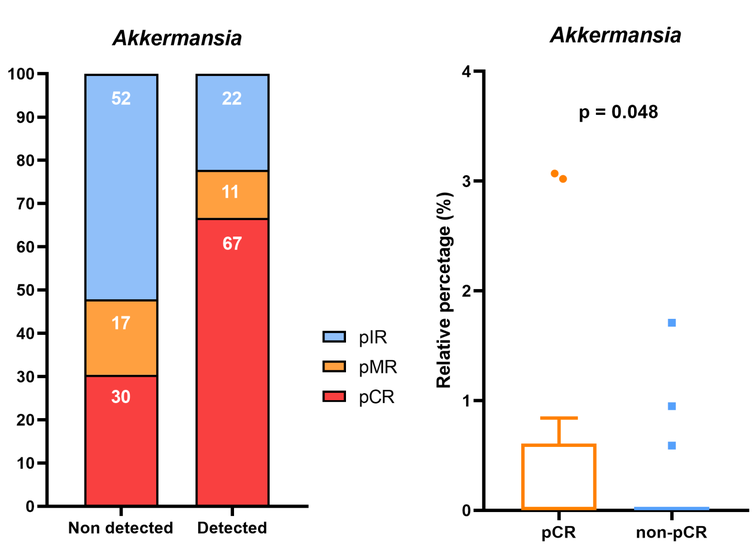
RESULTS

Firmicutes were the most common Phylum with a relative abundance of 59,9%, followed by *Bacteroidetes* (26,4%), *Actinobacteria* (4,1%), and *Proteobacteria* (1,6%). On Genus level, *Bacteroides* were the most common genus with a relative abundance of 15,9%, followed by *Faecalibacterium* (12,8%).

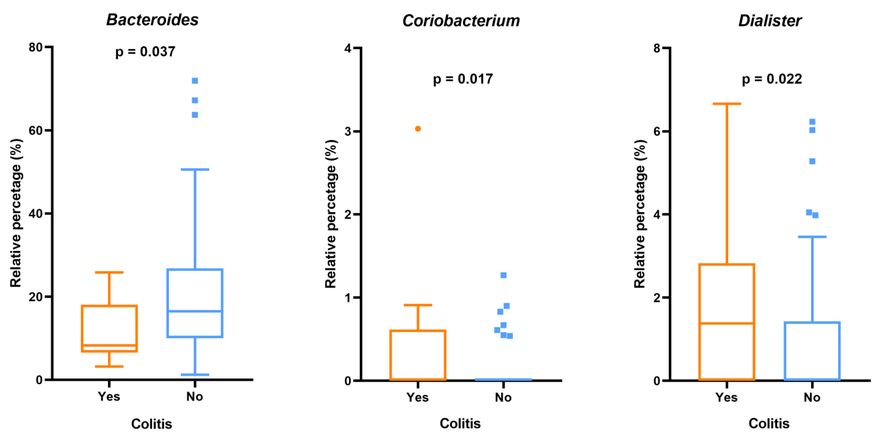


Presence of bacteria from the Genus *Bifidobacterium* was associated to long-term PFS (HR = 0.32 [95% CI: 0.14-0.77]) and OS (HR = 0.20 [95% CI: 0.056-0.69]), in the experimental arm. In addition, patients in the experimental arm had higher rates of complete pathological responses (pCR) in those with *Akkermansia* detection (66.7%) compared to those without (30.4%). The relative abundance levels of Akkermansia were also higher in patients with pCR compared to those without pCR (P = 0.048).

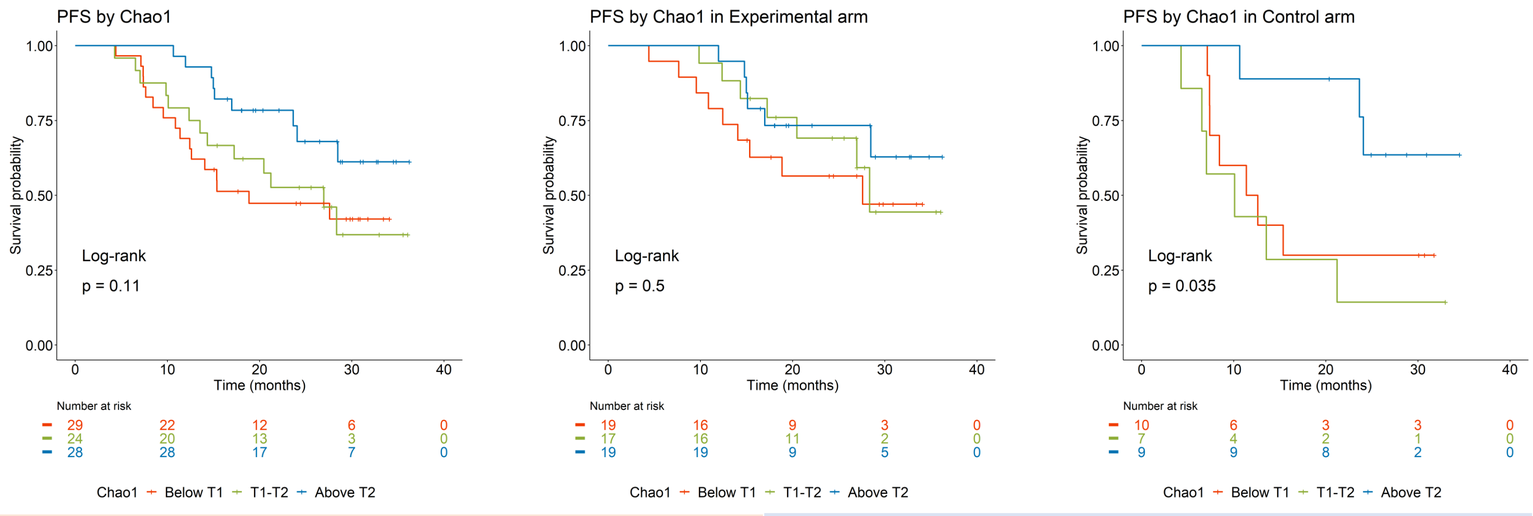




Regarding colitis as adverse events in the whole cohort, 25 events of colitis occurred in 18 patients, including two events of Grade 3 (2.33%) and four events of Grade 2 episodes (4.65%). Besides, higher relative percentage of *Bacteroides* were found in patients who did not suffer colitis events (P = 0.037), whereas higher percentage of *Coriobacterium* or *Dilaster* were detected in patients who underwent colitis adverse events (P = 0.017; P = 0.022, respectively).



Finally, alpha-diversity seems to have a greater impact on PFS compared with OS, especially the chao1 parameter have the greatest prognostic power compared with the other parameters (Simpson and Shannon). Patients with microbiotas belonging to the higher diversity tertile tend to have better PFS. Specifically, alpha-diversity has a greater impact on the branch of patients treated with chemotherapy.



CONCLUSIONS

Our results suggest that gut microbiome composition may have a relevant role in neoadjuvant immune-chemotherapy effectiveness as neoadjuvant treatment in resectable locally-advanced NSCLC patients.

	Progression-Free Survival						Overall Survival					
	All patients		Experimental		Control		All patients		Experimental		Control	
	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value
Simpson	0,51 (0,23-1,15)	0,106	0,65 (0,23-1,79)	0,401	0,35 (0,07-1,67)	0,186	0,89 (0,33-2,38)	0,818	1,40 (0,35-5,61)	0,635	0,71 (0,14-3,69)	0,683
Shannon	0,61 (0,27-1,39)	0,241	0,84 (0,30-2,31)	0,735	0,33 (0,07-1,62)	0,174	1,20 (0,46-3,12)	0,708	2,17 (0,56-8,42)	0,261	0,65 (0,12-3,36)	0,606
Chao1	0,44 (0,19-1,00)	0,05	0,54 (0,19-1,52)	0,244	0,30 (0,08-1,16)	0,08	0,61 (0,20-1,86)	0,381	1,05 (0,26-4,23)	0,94	0,24 (0,03-2,17)	0,205

*Univariate COX-Model calculated for upper tertile (above T2) of each alpha-diversity parameter: Simpson, Shannon and Chao1. Lower tertile (below T1 was used as reference category).

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