BACKGROUND The immune system plays a central role in the pathogenesis of cancer, by inhibiting as well as promoting effects on tumor development. Tumor infiltrating lymphocytes (TIL) and PD-L1 expression have been described as factors with prognostic influence in the early stages of breast cancer. However, its relationship to other classical prognostic factors of estimated importance is unknown.

METHODS The primary endpoint was to analyse the relationship between the immune profile, characterized by TILs, CD3 and CD8 T lymphocytes and PD-L1, and the histological phenotype and other classical prognostic factors (histological grade, ki67, hormone receptors, HER2 neu). We analysed 138 samples from patients with resected early breast cancer. TILs, CD3 and CD8 T lymphocytes were quantified in the tumor stroma. PD-L1 expression was measured in immune cellularity (IC) and tumor cells (TC) (PD-L1+ if ≥1% and PD-L1- if <1%).

RESULTS The median of the variables analysed was: TILs 2% (interquartile range [IQR] 4); CD3 1.6% (IQR 3.95), CD8 1.4% (IQR 3.57). PD-L1 was positive for IC and TC in 40.2% (35/138) and 9.2% (8/138) of patients, respectively. TILs, CD3, CD8 and PD-L1 were significantly associated with G3, Ki67 and negative RE (p < 0.05). HER2 phenotype had the highest percentage of TILs (20%, IQR 43.5), CD3 (14%, IQR 23.65) and CD8 (8.4%, IQR 14.7), followed by Triple Negative (TN) (TILs 10% IQR 48.5; CD3 5% IQR 20.8; CD8 2%, IQR 12.8) and luminal type (TILs 1.5% IQR 4; CD3 0.97% IQR 3.8; CD8 0.92%, IQR 3.3). PD-L1_ic expression was higher in TN (PD-L1 ic 3.5%, IQR 25) followed by HER2 (PD-L1 ic 2%, IQR 20) and it had minimal expression in luminal. The expression of PD-L1_tc was significantly higher in HER2 phenotype (PD-L1_tc 0.5%, RQI 1.75) followed by TN (0.5%, IQR 1). Luminal phenotype did not show PD-L1_tc expression.

CONCLUSIONS TILs, CD3, CD8 and PD1L expressions were significantly associated with worse prognosis phenotypes. HER2 and TN phenotypes presented more TILs and PD-L1 expression than luminal samples. This suggests a greater influence of the immune system in the development of HER2 and TN breast cancer.