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PLA2G2A overexpression is associated with poor therapeutic response and inferior outcome in rectal cancer patients receiving neoadjuvant concurrent chemoradiotherapy.

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Abstract

AIMS: The aim of this study was to investigate the prognostic impact of group IIA phospholipase A2 (**PLA2G2A**) expression and its role in predicting the **response** to **neoadjuvant concurrent** cheomoradiotherapy (CCRT) in **rectal cancer**.

METHODS AND RESULTS: Through analysing a public transcriptome of **rectal** cancers, the **PLA2G2A** gene was identified as a significant predictor for CCRT **response**. We validated the expression of **PLA2G2A** using immunohistochemistry in the pretreatment tumour specimens from 172 **patients** with **rectal cancer**. The results were correlated with clinicopathological features, tumour regression grade, overall survival (OS), disease-free survival (DFS) and local recurrence-free survival (LRFS). High expression of **PLA2G2A** was **associated** with advanced pretreatment tumour status (P = 0.001), advanced pretreatment nodal status (P = 0.010), advanced post-treatment tumour status (P = 0.002) and lower tumour regression grade (P = 0.006). Furthermore, **PLA2G2A** expression was correlated negatively with gamma H2A histone family, member X (γ-H2AX) expression (P < 0.001, r = -0.580). More importantly, high expression of **PLA2G2A** emerged as an adverse prognostic factor for OS (P = 0.0190), DFS (P < 0.0001) and LRFS (P < 0.0001). In multivariate analysis, it remained independently prognostic for shorter DFS (P = 0.014) and LRFS (P = 0.012).

CONCLUSIONS: High expression of **PLA2G2A** was **associated** with **poor therapeutic response** and worse survival in **patients** with **rectal cancer receiving neoadjuvant** CCRT, justifying **PLA2G2A** as an important marker to predict CCRT **response** and **outcome**.

KEYWORDS: CCRT; **PLA2G2A**; **chemoradiotherapy**; **rectal cancer**

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