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Association between prostate-specific antigen decline and survival outcomes in patients with metastatic castrate-resistant prostate cancer treated with first line abiraterone acetate

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Introduction & Objectives: Abiraterone acetate (AA) with prednisone is standard in metastatic castrate-resistant prostate cancer (mCRPC). Assessing timing and quality of response can be challenging. Several studies have reported that an early reduction in prostate-specific antigen (PSA) level is associated with longer survival. There is also some evidence about the prognostic value of other biomarkers such as haemoglobin (Hgb) and alkaline phosphatase (ALP) level. The aim of our study was to evaluate PSA response at 8-12 weeks post-AA as predictor of overall survival (OS). We also assessed the relationship between Hgb and ALP levels and survival.

Materials & Methods: We conducted an observational, retrospective study at 3 portuguese centers. Patients (pts) with mCRPC treated with first line AA between 1/2017 and 12/2021 were eligible. Clinicopathological and survival data were extracted from medical records. Outcome measures included OS, progression free survival (PFS), PSA response at 8-12 weeks of AA, and Hgb and ALP at start of AA.
PSA response was defined as ≥30% reduction, low Hgb if ≤12.0g/dL and high ALP if ≤116UI/L. Univariate analysis for PFS and OS were performed with the Kaplan-Meier method. Cox proportional hazards regression was used to test the effect of PSA response, Hgb and ALP on survival outcomes. SPSS v27 was used for statistical analysis.

Results: Between 1/2017 and 12/2021 85 pts with mCRPC were treated with AA. The median age was 75yo (range 57-93) and median PSA was 37.8 (range 0.11-1672); 20 (23.5%) pts had received prior docetaxel in castrate-sensitive phase and all had androgen depletion therapy. At mCRPC phase, 41 (48%) pts had nonregional lymph node metastases, 68 (80%) had bone metastases and 18 (21%) had visceral metastases. Median Hgb level was 13g/dL (range 7.7-15.5) and median ALP was 92UI/L (range 26-790). Median duration of AA treatment was 15.8 months (range 2.24-71.51). Eleven (12.9%) pts had a rise in PSA; in the remaining pts, median PSA reduction was 67% (range 4-100). Sixty (70.6%) pts had a PSA response ≥30%. In Cox proportional hazards model, after controlling for metastases site and prior docetaxel, PSA response ≥30% was associated with longer PFS (HR 0.34, 95% CI 0.192-0.595, p<0.001) and OS (HR 0.42, 95% CI 0.222-0.806, p=0.009). Low Hgb was associated with a worse PFS (p=0.007) and OS (p=0.002). High ALP was associated with worse OS (p=0.002) but had no impact in PFS (p=0.108).

Conclusions: In this cohort, PSA response ≥30% 8-12 weeks after AA initiation was significantly associated with improved PFS and OS. Other prognostic factors associated with better outcomes were Hgb >12g/dL and ALP <116UI/L. As mCRPC treatment strategies continue to evolve, additional validated biomarkers are needed to facilitate treatment decisions and to guide treatment algorithms.