

Detection of ERCC1 and MRP-7 in circulating tumor microemboli from patients with locally advanced head and neck squamous cell carcinoma and their relation with progression free survival

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BACKGROUND: There are different options of treatment for locally advanced head and neck squamous cell carcinoma (LAHNSCC) patients: upfront surgery followed by radiotherapy (RT), RT with chemotherapy (CT) or cetuximab preceded or not by induction CT (ICT). Despite efforts, there are no predictive biomarkers to guide this choice. Our objective was to determine the prognostic role of CTCs and CTC's microemboli (ME) in LAHNSCC patients treated with curative intention and to correlate them as also their drug resistance proteins expression with progression free survival (PFS). **METHODS:** Blood samples of 43 non-metastatic LAHNSCC patients, stages III/IV, were analysed for CTCs using ISET (Rarecells, France), in two scenarios: curative surgical resection and adjuvant treatment (RT +/- CT) and candidates for a non-surgical strategy (unresectable or organ- preservation) based on combination of RT with CT or cetuximab, with or without ICT. The analysis included CTCs counts, presence of ME and expression of drug resistance proteins, ERCC1 and MRP-7 (related to cisplatin and taxane resistance, respectively) in these cells. **RESULTS:** The median number of baseline CTCs was 2.0 CTCs/ml (0-8) and 27 of 43 patients had CTCs analyzed after treatment, with a median count of 3.0 CTCs/ml (0-12). Patients with CTCs count under the median had worse progression free survival (PFS) at baseline (11.8 x 17.6 months; p=0.307) and better PFS after treatment (11.66 x 9.5 months; p=0.132). The presence of ME was strongly correlated with worse PFS after treatment (first follow-up; p=0.012), especially if ERCC1 (7.2 x 17.9 months; p<0.001) or MRP-7 staining were positive (10.4 x 17.4 months; p= 0.025) in these ME vs the negative staining. **CONCLUSIONS:** Median CTC after treatment was associated with impact on PFS, although without statistical significance. The presence of ME after treatment, especially with positive staining for ERCC1 or MRP-7, were strongly and statistically correlated with worse PFS in LAHNSCC treated with curative intention.