Introduction: Radiochemotherapy is the basic treatment for patients with squamous cell carcinoma of the anal canal. Anemia is reported to have adverse effects on treatment outcome.

Methods: In the period from January 2003 to January 2013, 97 consecutive patients with histologically confirmed squamous cell carcinoma of the anal canal were treated radically with 3-dimensional conformal or intensity-modulated radiation therapy and with concurrent mitomycin C and 5-fluorouracil. The influence on survival of pre-treatment, mean on-treatment and end-of-treatment hemoglobin (Hb) concentrations was studied.

Results: Ninety-two percent of patients completed treatment according to the protocol. The 5-year locoregional control, disease free survival, disease specific survival and overall survival rates for all patients were 72%, 70%, 77% and 62%, respectively. In univariate analysis, patients with pre-treatment and end-of-treatment Hb >120 g/L had significantly better survival than patients with Hb \leq 120 g/L. Patients with mean on-treatment Hb >120 g/L only had statistically significant better locoregional control and overall survival than patients with Hb \leq 120 g/L. In multivariate analysis, independent prognostic factors were pre-treatment Hb (>120 g/L vs. \leq 120 g/L) for overall survival (HR = 0.407, 95% CI = 0.181–0.920, p = 0.031) and stage (I & II vs. III) for disease specific (HR = 4.038, 95% CI = 1.582–10.303, p = 0.003) and overall survival (HR = 2.350, 95% CI = 1.226–4.502, p = 0.010).

Conclusion: The pre-treatment, mean on-treatment and end-of-treatment Hb concentration >120 g/L carried better prognosis for patients with squamous cell carcinoma of the anal canal treated with radiochemotherapy. The pre-treatment Hb >120 g/L was an independent prognostic factor for overall survival of patients with anal canal cancer.