

Concurrent Chemotherapy and Volumetric Modulated Arc Therapy (VMAT) in anal canal carcinoma- Reduction of acute gastrointestinal and genitourinary toxicity

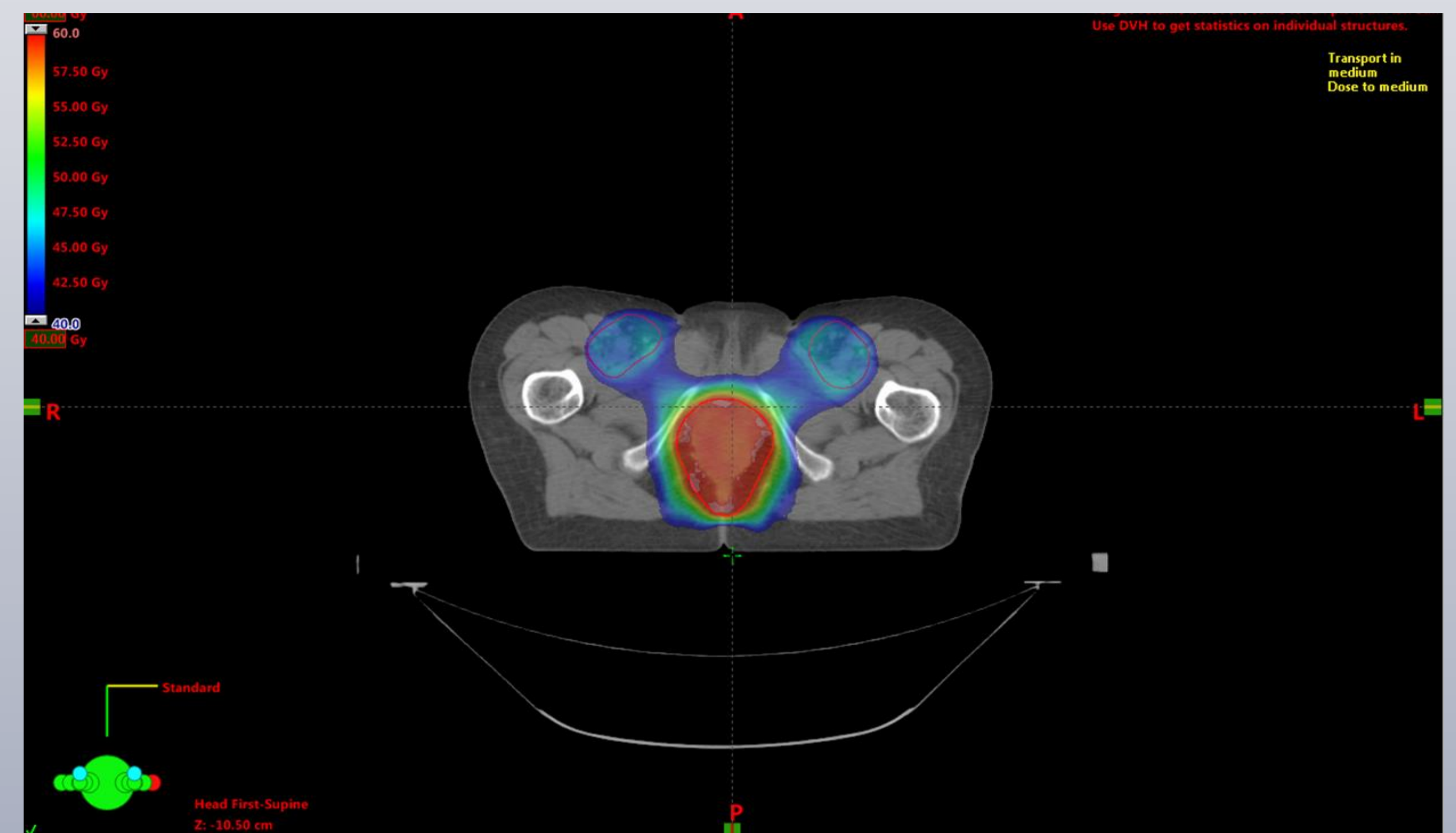
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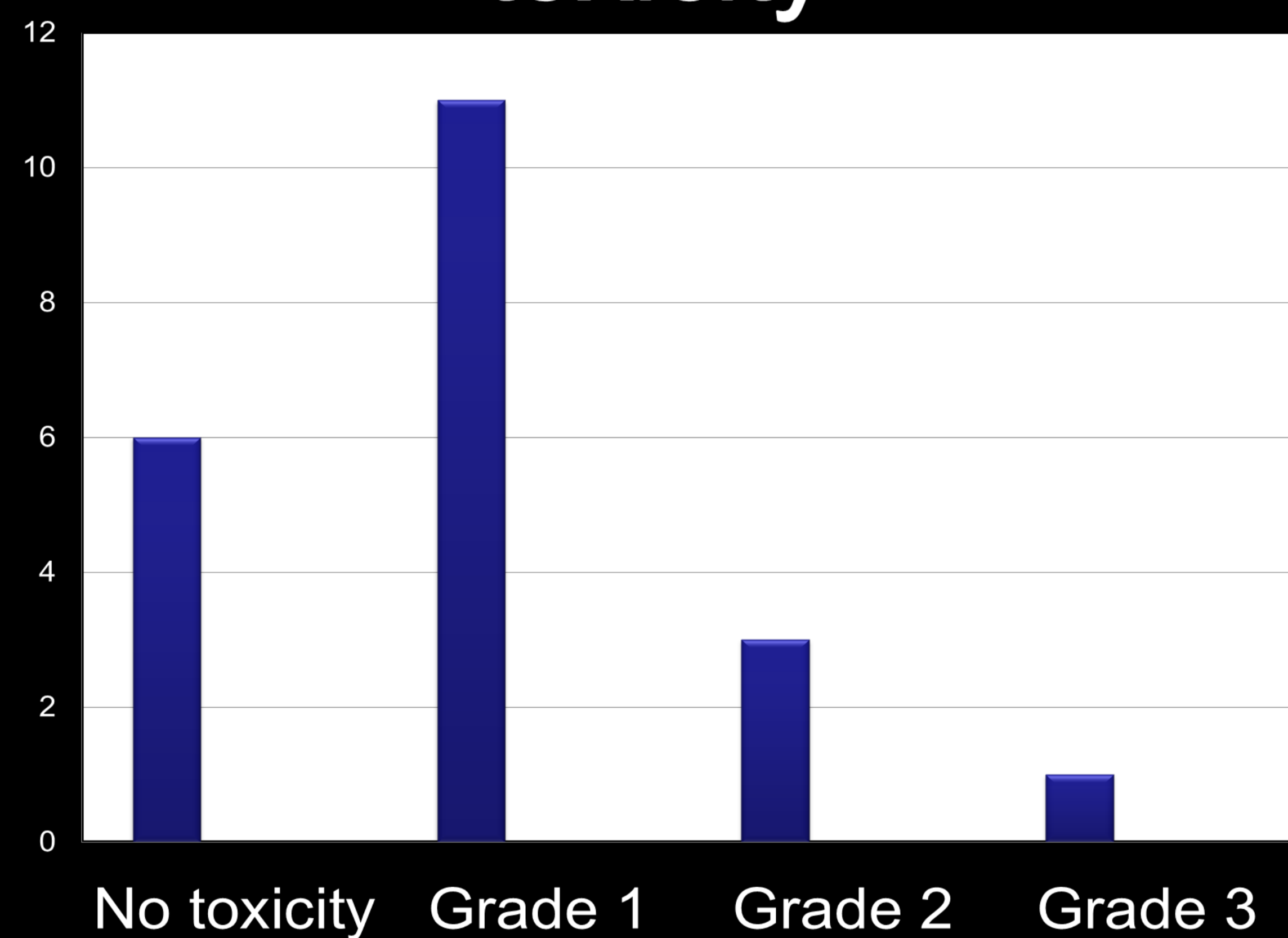
Purpose: To investigate the acute gastrointestinal (GI) and genitourinary (GU) toxicity in anal cancer patients, treated with definitive chemoradiation using Volumetric Modulated Arc Therapy (VMAT/Rapid Arc)

Methods: We retrospectively reviewed the records of 21 patients diagnosed with anal cancer, treated in our institution with concurrent chemoradiation from January 2010 to July 2014. Median total dose was 57.6 Gy (range 55.8-59.4 Gy), 1.8 Gy daily dose. Anal canal and mesorectum, external iliac, internal iliac, presacral and inguinal lymph nodes were irradiated up to 39.6 Gy and after a planned split -median gap 11,3 days (range 2-23 days)- the primary tumor and involved lymph nodes were boosted up to 19.8 Gy/1.8 Gy daily dose. All patients were treated with a VMAT/Rapid Arc technique in supine position with full bladder. The bowel bag and the urinary bladder were contoured according to RTOG guidelines. Chemotherapy with 5-Fluorouracil (200 mg/mq continuous infusion on days 1-4 and 29-32) and Mitomycin-C (10 mg/mq on days 1 and 29) was the standard regimen for 19 patients. Two patients were treated with Capecitabine and Mitomycin-C. All patients were checked weekly by a radiation oncologist, and the GI and GU acute toxicity was reported according to RTOG Acute Radiation Morbidity Scoring Criteria. The bowel volume receiving 30Gy (V30) and the bladder volume receiving 30 Gy (V30) were considered as predictors for acute GI and GU toxicity.

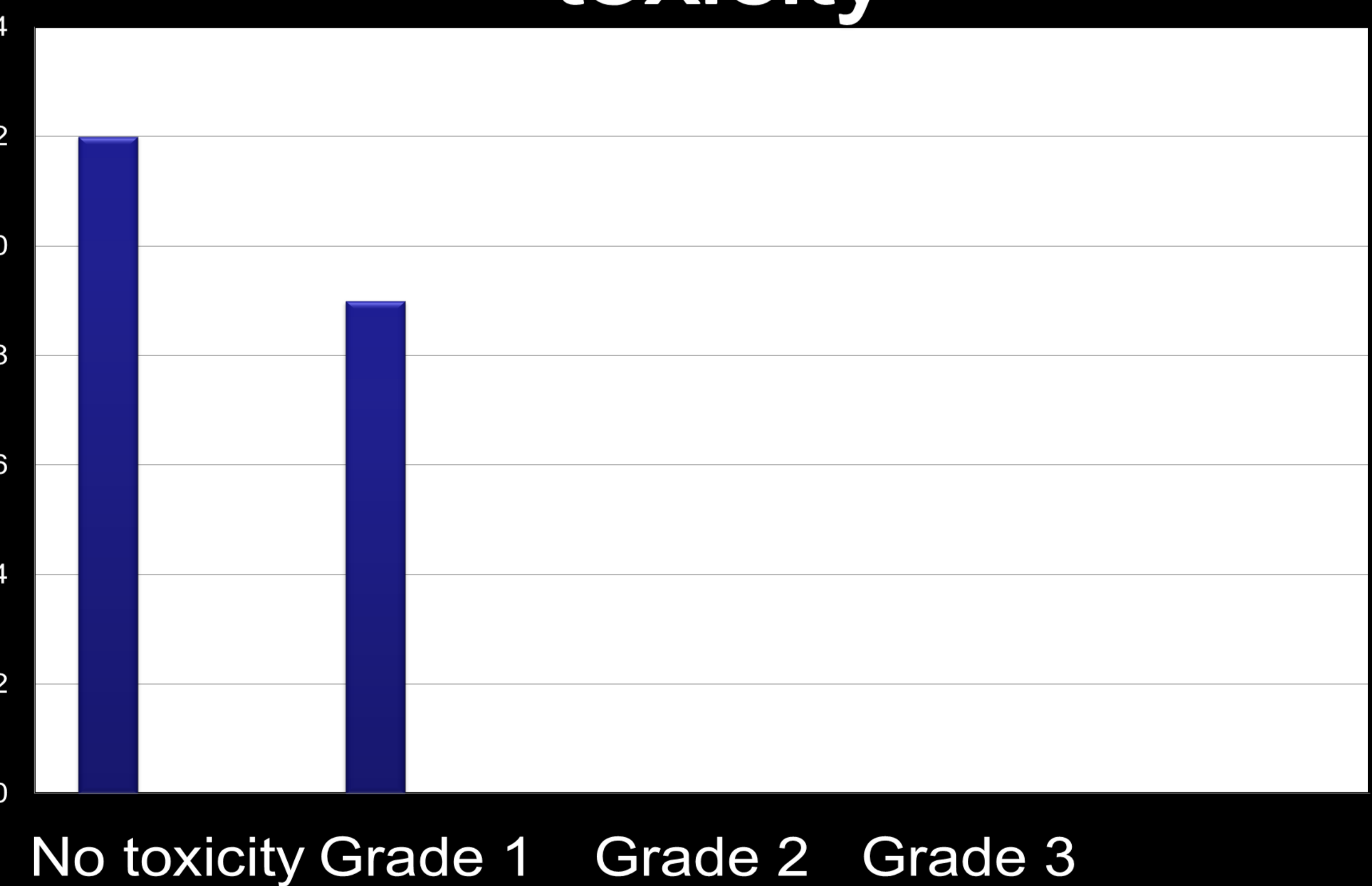
Results: We registered G1 gastrointestinal toxicity in 11 patients, G2 in 3 and G3 in 1 patient. In this latter case bowel bag V30 was 940 cc. Median V30 for bowel bag was 406 cc (range 48-940). Nine patients experienced G1 genitourinary toxicity. No G2 or higher GU toxicity were recorded. Median V30 for bladder was 47cc (range 3-182).



Acute gastrointestinal toxicity



Acute genitourinary toxicity



Conclusions: VMAT/Rapid Arc technique in combination with concurrent chemotherapy (5-Fluorouracil and Mitomycin-C) for the treatment of anal canal cancer is a feasible option with significant reduction of Grade 2+ acute gastrointestinal and genitourinary toxicity. V30 for bowel bag and bladder are important predictors for severe acute GI and GU toxicity

