Material and Methods: In the period from May 2014, 38 patients with primary cervical cancer were treated with combined radiotherapy using the new split-adaptive methodology for IGBT. We used conformal radiation techniques: BOX method, IMRT or RapidArc. Total dose on the pelvic area and regional metastasis was 50 Gy. Further HDR IGBT brachytherapy was followed by dosimetry planning MRI - images. The treatment was on 1st and 2nd, 8th and 9th days, ring tandem applicators implantation under general anesthesia. Between the fractions 1 and 2 and 3 and 4, the patients were with applicator under the supervision of medical staff during the day. Monitoring planning was conducted according to MRI-studies; as a result treatment plan was composed for every 1 fraction. The position of the applicator in relation to the tumor and critical organs during the day doesn’t change provided that the methodology is being correctly observed. Dose plans were optimized for maximal tumor dose (D90) and coverage (V100 and V80). The dose parameters in the target volume are the following: D 90 = 7.3 (5.9-9.1) Gy, V 100 = 91.5 (79.2-99.1) %, V 80 = 97.8 (90.5 -100). Of the patients it was T2bN0MO - 7 patients, T3bN0MO - 5, T2b-3bN1M0 - 18, T2b-3bN1M1 - 8.

Results: in the results the values of dose rates (D 2 cc / D 0.1 cc) to organs of risk (bladder, rectum and sigmoid) are the following: 3.7 (1.7-7) / 4.8 (2.2 -9.4) Gy; 3.1 (1.2-6.4) / 4.2 (1.4 - 8.3) and 3.9 (2.2-5.7) / 5.5 (3.5 -7.6) Gy. During follow-up time for 12 months no any acute or late toxicity of grade 2 were observed and not observed any difference in comparison with the fractionation scheme used previously. No one local recurrence were observed, regional recurrence in 2 (2 and 7 months), distant metastasis in 1 (12 months). The patients have undergone the treatment satisfactorily. The number of surgical implantations decreases from 4 to 2. According to preliminary data, local radiation reactions are not multiple.

Conclusion: The main advantage of this method is the dose delivery in a shorter period of time, which allows for a greater control of the tumor. This method allows to reduce the time of course of brachytherapy to 9 days. Evaluating the effectiveness of treatment shows good tolerance of this treatment with satisfactory results. This clinical study is currently ongoing.

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MRI-guided brachytherapy and 3D/IMRT radiotherapy for cervical carcinoma. A prospective study
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Purpose or Objective: To evaluate dosimetric and clinical findings of MRI-guided HDR brachytherapy (HDR-BQ) for cervical carcinoma.

Material and Methods: From 2008 to 2014: 50 patients. All patients had a CT, MRI and pelvic-paraortic lymphadenectomy. Treatment: pelvic(+/-)para-aortic3D/IMRT radiotherapy(45Gy) and weekly cisplatin followed by HDR-BQ and pelvic node/parametrial boost 60Gy. Two implants at week 6th and 7 th were done: 5 fractions of 66Gy and from 2011 4 fractions of 7Gy. MRI/TAC was done in each implant. There where defined: GTV, CTH-ER, CTV-IR: OAR: rectum, bladder and sigmoid.

Results: Patients: T1b2-T2a: 3p, T2b 36p, T3a: 2p; T3b 9p; N0: 31p, N1 19p. With a median follow up of 50.6 months (8.1 - 89.2 months), 5 patients had local recurrence, 6 lymph node recurrence, 6 distant metastasis and 36 without recurrence. Local control at 5 years was 88%; ib2-N1B: 93%; ib1: 76%, (p:0.07). Lymph node Regional Disease Free Survival(RDFS) 5y was 88%; IB2-N1B: 89%, III: 83% (p:rs); for pN0: 94%; pN+: iliac-paraaortic: 77% (p: 0.08). Metastasis Free Survival 5y was 78%; IBNO: 78%, IBNN1: 89%, III: 63%. Overall