

The Doppler Study of Uterine Artery and Intratumoral Vessels for Clinical Assessment of Effectiveness of Chemoradiotherapy of Invasive Cervical Cancer

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Abstract

The article presents a comparative outcome analysis of complex Ultrasonic Diagnosis (USD), Computed Tomography (CT), SCC-marker data in 52 patients with advanced-stage of invasive cervical cancer before and after chemoradiotherapy (CRT). All patients have undergone transvaginal USD using Color and Power Doppler (CD, PD), pulsed-wave Doppler. Ultrasound monitoring has shown a significant decrease in the volume of uterus and cervix as well as changes in the structure and echogenicity of the tumor after treatment in all patients. The examination of intratumoral blood flow in 39 (75 %) women after a course of CRT has shown reduced peak systolic velocity from $13,97 \pm 10,15$ to $10,56 \pm 8,68$ cm/s ($p < 0,05$). Resistance index (RI) in the 1st group increased from $0,36 \pm 0,26$ to $0,48 \pm 0,31$ ($p < 0,05$). Positive results of USD coincide with the findings of CT and SCC. After a course of CRT in 13 patients' endocervical blood flow remained abnormal: level RI remained low (from 0,2 to 0,45). After a course of CRT performance peak systolic velocity decreased significantly from $14,7 \pm 10,14$ to $12,43 \pm 11,6$ cm/s ($p = 0,05$). In the 2nd group according to CT, 10 patients identified positive dynamics of the tumor, 3 patients identified stabilization. When observed within 6 months all patients of the 1st group have shown local disease – free survival. In the 2nd group the continued tumor growth has been revealed. Conclusion: For evaluating of the effectiveness of chemoradiotherapy for invasive cervical cancer, the diagnostic algorithm must include Ultrasound with Doppler modes.

Key words: Cervical Cancer, Ultrasound, Color and Power Doppler, Chemoradiotherapy.

References

1. *Bulanov M. N.* Ultrasonic gynecology: course of lectures: In two parts. P. 2. Moscow: «Vidar-M» publishing house, 2012. P. 84–87 (in Russian).
2. *Davydov M. I., Axel E. M.* Statistics of malignant new growths in Russia and CIS countries in 2012. ronc.ru. Moscow, 2014. P. 46 (in Russian).
3. Diseases of the cervix: a textbook. Sh. Kh. Gantsev (ed.). Moscow: GEOTAR-Media, 2014. P. 160 (in Russian).
4. *Kudrevatykh E. V., Ter-Arutyunyants S. A., Mershina E. A., Sinityn V. E.* Magnetic and resonant tomography in diagnostics and an assessment of results of the combined and chemoradiotherapy of a cervix cancer of a uterus cancer. The Kuban scientific medical messenger. 2010. No. 6. P. 65–70 (in Russian).
5. *Maksimova N. A., Boyko K. P.* The Ultrasound assessment of efficiency of chemoradiotherapy of a cervix cancer and of a uterus cancer. Problems in Oncology: Materials VIII of the All-Russian Congress of Oncologists. St. Petersburg, 2013. No. 3. P. 745 (in Russian).

6. *Rubtsova N. A., Novikova E. G., Sinitsyn V. E.* Role of diffusion-weighted magnetic resonance imaging in the diagnosis of uterine cancer relapsed. *Radiologiya – praktika*. 2012. No. 4. P. 41–54 (in Russian).
 7. *Alcazar J. L., Castillo G., Martinez-Monge R., Jurado M.* Three-dimensional Static Ultrasound and 3D Power Doppler in Gynecologic Pelvic Tumors. *Donald School Journal of Ultrasound in Obstetrics and Gynecology*. April – June. 2013. P. 187–199.
 8. *Ribatti D.* History of Research on Tumor Angiogenesis. Edited by Dordrecht. Springer Netherlands, 2009. P. 136.
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