



International Design and Implementation Group for radiation Oncology workshops

Radiotherapy for Hepatocellular Carcinoma in Russia: A Survey-Based Analysis of Current Practice and Impact of an Educational Workshop on Clinical Expertise

Marina Chernich, Natalia Dengina, Catherine Degnin, Yiyi Chen, Erin Gillespie, Sarah Hoffe, Kujtim Latifi, Nima Nabavizadeh, Sergey Usyckin, Ekaterina Kharitonova, Yulia Egorova, Alexandr Pankratov, Ilya Tsimafeyeu, Sergei Tjulandin, Charles Thomas, Shervin Shirvani, Anna Likhacheva, Timur Mitin

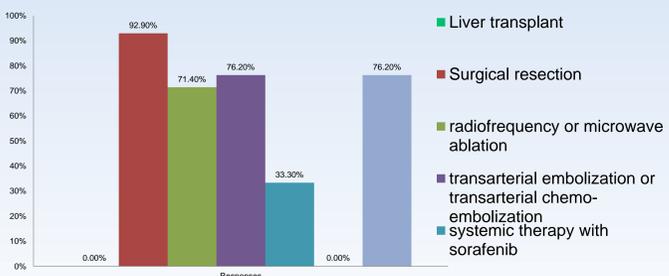
Background

Hepatocellular carcinoma (HCC) represents a significant clinical unmet need in Russia. Radiation therapy (RT) is an effective treatment modality for HCC, but its use is greatly underutilized in the world. The experience in Russia with liver-directed RT is unknown.

Methods

Under the auspices of Russian Society of Clinical Oncology (RUSSCO) our team has conducted a contouring workshop for Russian radiation oncologists. Pre- and post-workshop surveys were analyzed to determine the level of theoretical knowledge, comfort level among Russian providers to deliver liver-directed RT and learn about available treatment modalities for HCC patients in Russia. The effect of contouring workshop on participants' knowledge was tested using mixed effect model.

Figure. Reported availability of liver-directed HCC therapies by Russian Radiation Oncologists.



Results

Forty-two pre-workshop and 24 post-workshop questionnaires were analyzable. 68% of respondents have never evaluated a patient with HCC in clinic and only 7% (3 out of 42) have ever treated a patient with HCC with liver-directed RT. At the same time, 80% of respondents before the workshop and 85% after the workshop felt comfortable treating a patient with HCC with liver-directed RT, with 50% of physicians ready to recommend an SBRT therapy to their patients. Advanced motion management techniques commonly used with liver SBRT were not frequently available in most Russian centers, with abdominal compression used by 14%, gating by 31% and tumor tracking by 10% of respondents. The knowledge base pertaining to evaluation of HCC patients and selection for appropriate liver-directed therapies was dramatically improved as a result of the workshop.

Figure. Reported availability of advanced radiation therapy motion management techniques by Russian Radiation Oncologists.

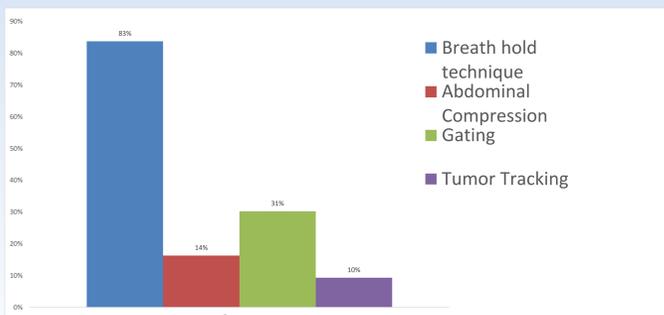


Table. Change in knowledge base regarding Evaluation and management of patients with HCC after attendance of the educational workshop.

	Pre-workshop (N = 40)	Post-workshop (n = 24)	p-value*
The role of biopsy in establishing HCC diagnosis			
All patients require biopsy to establish HCC diagnosis	29 (73%)	1 (4%)	< 0.001
In patients with underlying liver cirrhosis biopsy is not necessary and diagnosis can be made based on imaging and laboratory findings	11 (28%)	23 (96%)	
Familiarity with Child-Pugh score			
Never heard about Child-Pugh score	9 (23%)	1 (4%)	< 0.001
Heard about Child-Pugh score, but don't know which parameters it measures	9 (23%)	3 (13%)	
Know how to calculate Child-Pugh score, but don't know how to incorporate the score into clinical decision	16 (40%)	2 (8%)	
Very familiar with Child-Pugh Score, can calculate the score and incorporate into clinical decision	6 (15%)	16 (67%)	
Imaging of HCC (multiple responses possible)			
Non-contrast imaging is most appropriate to avoid extra toxicity in patients who already have poor liver function	9 (23%)	1 (4%)	ND **
HCC enhances better than normal liver parenchyma on arterial phase	25 (63%)	23 (96%)	
HCC enhances less than normal liver parenchyma on venous phase	14(35%)	11 (46%)	

References

1. Ferlay J, Soerjomataram I, Dikshit R, et al: Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. International Journal of Cancer 136:E359–E386, 2015
2. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Allen C, et al: Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life-years for 32 Cancer Groups, 1990 to 2015: A Systematic Analysis for the Global Burden of Disease Study. JAMA Oncol 3:524–548, 2017
3. Dawson LA: Overview: Where Does Radiation Therapy Fit in the Spectrum of Liver Cancer Local-Regional Therapies? Seminars in Radiation Oncology 21:241–246, 2011
4. Bazin IS, Omelyanovsky VV, Medical MA, et al: Analysis of the Social and Economic Burden of Hepatocellular Carcinoma in Russia. Creative Surgery and Oncology, 2011: p. 22-25.
5. Malignancies of Upper GI Tract [Internet], in Moscow, Russia Available from: <http://www.rosoncweb.ru/events/2017/04/13/archive/>
6. Brock KK: Imaging and Image-Guided Radiation Therapy in Liver Cancer. Seminars in Radiation Oncology 21:247–255, 2011
7. Crane CH, Koay EJ: Solutions that enable ablative radiotherapy for large liver tumors: Fractionated dose painting, simultaneous integrated protection, motion management, and computed tomography image guidance. Cancer 122:1974–1986, 2016

Conclusion

Liver-directed RT is not commonly used in Russia in the management of patients with HCC, which may explain inadequate theoretical knowledge base of Russian radiation oncologists. Contouring workshop resulted in dramatically improved understanding of evaluation and management of HCC patients. High comfort level among Russian providers with liver-directed RT in the absence of clinical experience and necessary advanced motion management tools is worrisome. Authors recommend starting with a more protracted fractionated RT and building experience through attendance of additional workshops and lectures and participation in multidisciplinary liver tumor boards with prospective analysis of treatment toxicity and outcomes.

Table. Characteristics of 42 respondents who filled out pre-workshop questionnaire.

	Number of Respondents (%)
Number of years since completing specialty training	
0-10	24(57%)
>10	18 (43%)
Practice Region	
Moscow city	29 (69%)
Outside of Moscow city	12 (29%)
Unknown	1 (2%)
Number of HCC patients evaluated	
None	26 (62%)
At least one	16 (38%)
Among those who evaluated HCC patients in clinic at least once, number of HCC patients treated with liver-directed radiation therapy	
None	13 (81%)
At least one	3 (19%)