

## Experience of Using Elastography in the Diagnosis of Liver Fibrosis in the Practice of Hepatology Center

P. I. Rykhtik\*, E. N. Ryabova, S. A. Vasenin,  
L. V. Shkalova, V. E. Zagaynov

Privolzhsky Regional Medical Center FMBA of Russia, Department of Radiation Diagnostics

---

### Abstract

We examined 24 patients aged from 22 to 70 with liver cirrhosis of different etiology. All patients were performed with complex abdominal ultrasound, Doppler ultrasound of the portal system and elastography. All information is compared with puncture biopsy of the liver in 100 % cases. In applying to the method of liver elastography average shear wave velocity was  $2,9 \pm 0,5$  m/s or  $24,4 \pm 6,2$  kPa. According to elastography the liver fibrosis F3 Metavir classification diagnosed in the 1st (4,2 %) patient, F3-F4 – in 6 (25 %), F4 – in 14 (70,8 %). After a liver biopsy in all patients has been diagnosed liver cirrhosis, which corresponded stage F4 liver fibrosis. Divergence diagnostic stage fibrotic process in liver biopsy and elastography data recorded in one case, which was 4,2 %. In 95,8 % there has been a complete coincidence of liver fibrosis by Metavir. Elastography can improve the early non-invasive diagnosis of liver fibrosis and cirrhosis and confirm the diagnosis without performing a biopsy of the liver.

**Key words:** Elastography of the Liver, Liver Fibrosis, Liver Cirrhosis, Liver Biopsy.

---

### References

1. Borsukov A. V., Krukovskiy S. B., Pokusaeva V. N., Nikiforovskai E. N., Peregudov I. V., Morozova T. G. Elastography in clinical hepatology (private). Smolensk, 2011. 276 p. (in Russian).
2. Lemeshko Z. A. Radiology in gastroenterology. Rossijskij zhurnal gastrojenterologii, gepatologii, koloproktologii. 2011. No. 1. P. 79–84 (in Russian).
3. Rudenko O. V., Safonov D. V., Rykhtik P. I., Gurbatov S. N., Romanov S. V. Physical basis of elastography. Radiologija – praktika. 2014. No. 3. P. 41–50 (in Russian).
4. Ryabova E. N., Rykhtik P. I., Shkalova L. V., Vasenin S. A., Zagaynov V. E. Noninvasive assessment volume of active parenchyma of the liver at the patients with liver cirrhosis and portal hypertension as a factor of prognosis outcomes after operation portosystemic shunting. Radiologija – praktika. 2012. No. 3. P. 77–82 (in Russian).
5. Andreev V. G., Shanin A. V., Atletova E. A., Demin I. Yu., Rudenko O. V., Krainov A. I. Acoustic radiation force on a cluster of rigid particles in soft tissues. Proc. 5th Int. Conf. «Frontiers of Nonlinear Physics». N. Novgorod, 2013. P. 51, 52. (in Russian).
6. Demin I. Yu., Rudenko O. V., Gurbatov S. N., Pronchatov-Rubtsov N. V. The nonlinear decay of narrowband and broadband noise in soft tissues. Proc. 5th Int. Conf. «Frontiers of Nonlinear Physics». N. Novgorod, 2013. P. 53, 54 (in Russian).
7. Garra B. S. Tissue elasticity imaging using ultrasound. Applied Radiology. 2011. No. 2. P. 24–30.

## Authors

**Rykhtik Pavel Ivanovich**, Ph. D. Med., Head of Department of Radiation Diagnostics, the Privolzhsky Regional Medical Center FMBA of Russia.

Address: Iliinskaya ul., 14, Nizhniy Novgorod, 603109, Russia.  
Phone number: +7 (8312) 421-69-74. E-mail: rykhtik@gmail.com

**Ryabova Elena Nikolaevna**, Physician of Surgical Department of Organ Transplantation, the Privolzhsky Regional Medical Center FMBA of Russia.

Address: Iliinskaya ul., 14, Nizhniy Novgorod, 603109, Russia.  
Phone number: +7 (8312) 421-69-74. E-mail: ryabova\_elena\_2011@mail.ru

**Vasenin Sergey Andreevich**, Head of Surgical Department of Organ Transplantation, the Privolzhsky Regional Medical Center FMBA of Russia

Address: Iliinskaya ul., 14, Nizhniy Novgorod, 603109, Russia.  
Phone number: +7 (8312) 421-69-74. E-mail: sergvasenin@yandex.ru

**Shkalova Lubov Vladimirovna**, Ph. D. Med., Head of Anatomopathological Department, the Privolzhsky Regional Medical Center FMBA of Russia.

Address: Nizhne-Volzhskaja naberezhnaja, 2, Nizhniy Novgorod, 603109, Russia.  
Phone number: +7 (8312) 421-69-74. E-mail: L\_Shkalova@mail.ru

**Zagaynov Vladimir Evgenievich**, Ph. D. Med., Head of Surgical Clinic, the Privolzhsky Regional Medical Center FMBA of Russia.

Address: Iliinskaya ul., 14, Nizhniy Novgorod, 603109, Russia.  
Phone number: +7 (8312) 421-69-74. E-mail: zagainov@gmail.com