

(13%) would result. Actually, the majority of cases without dilatation of HA (using both Caselitz and Buscarini's thresholds) had both *color-spots* and *hypervascularization*, thus further supporting our statement that intra-hepatic parameters have a better sensitivity and accuracy than extrahepatic ultrasonography parameters due to their ability to permit the diagnosis of even very small AVMs in their early stage of development. Evidently the presence of more severe vascular involvement determines an angiodynamic remodelling and gross abnormalities which can be detected on B-mode ultrasonographic study (mainly enlargement of HA in the extrahepatic tract and 'double channel aspect' in the portal spaces).

In conclusion, in this first controlled, prospective study, we have demonstrated that the diagnosis of HAVMs in HHT can reliably be made by merely using intra-hepatic parameters and does not require evidence of extrahepatic abnormalities. The latter are useful to grade the haemodynamic impact of HAVMs and the possible effect on liver angioarchitecture and clinical significance. We disagree with Dr. Buscarini's final comment in which she states that "Doppler US diagnosis of liver VMs in HHT requires a combination of extrahepatic and intra-hepatic findings, which can provide a diagnostic accuracy ranging between 95% and 99% for different observers" [7] because in the absence of a standard reference technique, data on sensitivity and accuracy cannot be considered reliable.

References

- [1] Buonamico P, Suppressa P, Lenato GM, Pasculli P, D'Ovidio F, Memeo M, et al. Liver involvement in a large cohort of patients with hereditary hemorrhagic telangiectasia: echo-color-Doppler vs multislice computed tomography study. *J Hepatol* 2008;48:811–820.
- [2] Caselitz M, Bahr MJ, Bleck JS, Chavan A, Manns MP, Wagner S, et al. Sonographic criteria for the diagnosis of hepatic involvement in hereditary hemorrhagic telangiectasia (HHT). *Hepatology* 2003;37:1139–1146.
- [3] Buscarini E, Buscarini L, Danesino C, Piantanida M, Civardi G, Quaretti P, et al. Hepatic vascular malformations in hereditary hemorrhagic telangiectasia: Doppler sonographic screening in a large family. *J Hepatol* 1997;26:111–118.
- [4] Buscarini E, Danesino C, Olivieri C, Lupinacci G, De Grazia F, Reduzzi L, et al. Doppler ultrasonographic grading of hepatic vascular malformations in hereditary hemorrhagic telangiectasia – results of extensive screening. *Ultraschall Med* 2004;25:348–355.
- [5] Sabbà C, Merkel C, Zoli M, Ferraioli G, Gaiani S, Sacerdoti D, et al. Interobserver and interequipment variability of echo-Doppler examination of the portal vein: effect of a cooperative training program. *Hepatology* 1995;21:428–433.
- [6] Ianora AA, Memeo M, Sabba' C, Cirulli A, Rotondo A, Angelelli G. Hereditary hemorrhagic telangiectasia: multi-detector row helical CT assessment of hepatic involvement. *Radiology* 2004;230:250–259.
- [7] Buscarini E, Gebel M, Ocran K, Manfredi G, Del Vecchio Blanco G, Stefanov R, et al. Interobserver agreement in diagnosing liver involvement in hereditary hemorrhagic telangiectasia by Doppler ultrasound. *Ultrasound Med Biol* 2008;34:718–725.

Carlo Sabbà

Paolo Buonamico

Gennaro Mariano Lenato

Arnaldo Scardapane

University of Bari, Dimimp, Policlinico,

Piazza Giulio Cesare Bari 70124, Italy

*Tel./fax: +39 080 5478708

E-mail address: c.sabba@dimimp.uniba.it

Francesco D'Ovidio

University of Bari, Department of Statistics,

Bari, Italy

Maurizio Pompili

Catholic University of Sacred Heart,

Rome, Department of Internal Medicine,

Rome, Italy

doi:10.1016/j.jhep.2008.06.008

Prevalence of hepatitis C in Romania: Different from European rates?

To the Editor:

We have read with much interest the review by Esteban et al. on the changing epidemiology of hepatitis C virus (HCV) infection in Europe [1]. Hepatitis C has become a major public health problem worldwide with significant geographical and temporal heterogeneity. The burden of HCV infection in Romania is an area of great concern for at least three main reasons: (1) based on scarce and outdated information, Romania is considered the European country with the highest prevalence rate (double that of Spain or Greece, for example); (2) Romania is one of the most important sources of mi-

grant population towards Western Europe, in particular to countries such as Spain and Italy, therefore altering the decreasing trend of HCV prevalence in these countries; (3) last but not least, there is an urgent need for a national strategy for the active detection and control of the silent epidemic of HCV-infected population in Romania. Although HCV infection is a major public health problem in Romania, its prevalence in the general population and its routes of transmission are largely unknown. Before 1989, during the communist era, data on the prevalence of viral hepatitis in Romania were scarce. The reported prevalence of HCV infection in Romania

used in the review by Esteban et al. is the result of a seroprevalence survey conducted between April and July 1990 on a sample of 1355 persons recruited from the population of Bucharest [2]. The population studied consisted of a *low-risk sample*, comprising the following groups: (1) children hospitalized for non-infectious diseases, (2) pregnant women, and (3) healthy adults, and a *high-risk group* comprising (1) children from five orphanages in Bucharest and (2) healthcare workers from four different health facilities in Bucharest. The reported prevalence of HCV infection in healthy adults was 4.5% as compared with 16.9% in the high-risk group of orphans [2]. From this point on, some other studies on HCV prevalence in Romanian population were published. In 1994, Molnar et al. reported a 4.9% HCV prevalence in general population in three counties in North-Western Transylvania [3]. In a multicentre study, Grigorescu et al. analyzed the aetiological profile of chronic hepatitis and liver cirrhosis in Romania, showing that HCV infection is responsible for 64% of chronic hepatitis and 59% of liver cirrhosis [4]. In 2005, our group found HCV infection to be responsible of 27.5% of end-stage liver disease in patients awaiting liver transplantation [5]. As Esteban et al. pointed out, the figures described above have changed in Romania, such as in all of Europe, in the last two decades due to the eradication of transfusion-acquired infections, the great improvement in healthcare facilities and the limited increase in intravenous drug users (IDU) in our country. We take this opportunity to present the preliminary data of a nationwide cross-sectional survey scheduled to be carried out between 2006 and 2008, aimed to determine the prevalence and risk factors for HCV infection in the general population in Romania through a multicentre stratified random cluster sampling investigation. To represent the geographical, economic, demographic, ethnic, and behavioural characteristics of the whole population, Romania was divided into three initial main strata representing the three geo-historical regions of Romania (Table 1). Serum samples from 8039 healthy adults (response rate 72%, aged 19–69 years) were tested for anti-HCV antibodies with a third generation EIA and confirmed by PCR testing. Overall, 273 anti-HCV positive patients were detected (3.50%; CI 3.10–3.92%). The prevalence of HCV infection for all of the 54 centres was significantly higher in rural areas (4.43%; CI 3.60–5.23%) as compared to urban areas (2.76%; CI 2.26–3.67%). A higher prevalence of HCV is associated with older age groups ($P = 0.002$), lower education level ($P = 0.006$) and lower income level ($P = 0.0001$). HCV infection independently associated with the history of transfusion, parenteral treatment, haemodialysis, and IDU, suggesting that transfusions and contaminated equipment used for medical procedures has played a key role in HCV transmission among the Romanian population. Finally, we fully agreed with Esteban et al.

Table 1
Epidemiologic study and its results

| | Phase 1* (December 2006– March 2007) | Phase 2 (September– December 2007) |
|---|--|--|
| Studied region of Romania | Walachia | Moldavia |
| Centres included** | 20 | 34 |
| Districts included | 13 | 18 |
| Subjects included | 3092 | 4947 |
| Anti-HCV positive patients/ HCV RNA positive | 93 (3.20%; CI 2.59–3.91%) | 180 (3.67%; CI 3.16–4.23%) |

*Phase = a pre-defined (approximately 4 months) time interval in which the sampling of study population in a geo-historical part of Romania (Phase 1 – Walachia, Phase 2 – Moldavia) took place.

**Centre = the GP practice where the subjects (selected from the healthy general population) were called on an outpatient visit to answer a questionnaire and for blood sampling.

that large-scale epidemiological studies, including molecular investigation, are required in order to estimate the HCV burden and characteristics, especially in new European countries, where scarce data are available, along with immediate measures to control (prevention of nosocomial transmission, control of HCV epidemic among IDU) and treat HCV infection.

References

- [1] Esteban J, Saulea S, Quer J. The changing epidemiology of hepatitis C virus infection in Europe. *J Hepatol* 2008;48:148–152.
- [2] Paquet C, Babes VT, Drucker J, Senemaud B, Dobrescu A. Viral hepatitis in Bucharest. *Bull World Health Organ* 1993;71:781–786.
- [3] Molnar G, Popa S, Jebeleanu L, Damian C. Studiul prevalentei markerilor serici ai infectiei cu virusurile hepatitelor in anamneza epidemiologica a populatiei. *Bacteriol Virusol Parazitol Epidemiol* 1994;30:141–149.
- [4] Grigorescu M, Radu C, Pascu O, Oproiu A, Ionita A. Etiological profile of chronic hepatitis and liver cirrhosis in Romania. A multicentre study. *Rom J Gastroenterol* 2001;10: 199–204.
- [5] Gheorghe L, Popescu I, Iacob R, Iacob S, Gheorghe C. Predictors of death on the waiting list for liver transplantation characterized by a long waiting time. *Transplant Int* 2005;18:572–576.

Liana Gheorghe
Speranta Iacob
*Gastroenterology and Hepatology Center,
Hepatology Department,
Fundeni Clinical Institute,
258 Fundeni Street, Sector 2,
022328 Bucharest, Romania*
E-mail address: drgheorghe@xnet.ro (L. Gheorghe)

Irma Eva Csiki
*Institute of Public Health,
Bucharest, Romania*