HEPATITIS A: ULTRASENSITIVE ENZYME-LINKED FLUORESCENCE ASSAY IN OCCASIONAL DETECTION OF PRIOR CONTACT IN A MEDICO-LEGAL SAMPLE IN LISBON

SPML

Vânia Mofreita[1,2], **Laura Cainé**[1,3,5], **Joana Rodrigues**[1,2], **Rui Nascimento**[1,2], **Olena Mukan**, **Jennifer Fadoni**[1], **Francisco Côrte-Real**[1,4], **António Amorim**[1,2,5]

[1]Instituto Nacional de Medicina Legal e Ciências Forenses, Laboratório de Virologia e de Análises Clínico-Forenses, Portugal; [2]Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal; [3]Faculdade de Medicina da Universidade do Porto, Porto, Portugal; [4]Faculdade de Medicina da Universidade de Coimbra, Coimbra, Portugal; [5]REQUIMTE – Analytical Development Group, Laboratório Associado, Portugal.

INTRODUCTION

Hepatitis A virus (HAV) continues to be a public health issue worldwide [1]. HAV infection is caused by the hepatitis A virus and transmission occur mainly via fecal-oral route [1,2,4], by ingesting contaminated food or water (especially to travelers visiting regions with intermediate or high endemicity, such as Africa, South and Central America and Asia), by direct contact with an infected person or using intravenous drugs [1-4]. However, this infection can be prevented through vaccination [1,3,5].

The level of endemicity of this virus can be determined by the prevalence of total antibodies directed against HAV (anti-HAV$_{total}$) in the adult population [5]. Due to the improvement of socioeconomic and sanitary conditions and vaccination, Portugal has become a country in transition from endemicity: from high to intermediate [2,6]

OBJECTIVES

The purpose of this study was to perceive the prevalence of anti-HAV$_{total}$ and the trend in the level of endemicity in the population of the Lisbon region through ultrasensitive enzyme-linked fluorescence assay in a medico-legal sample.

MATERIAL AND METHODS

From 43 individuals involved in medico-legal expertise, between 2021 and 2022, in the Lisbon region, carried out by the medico-legal services in that region, blood was collected with informed consent whenever applicable and, after blood centrifugation, a VIDAS® Anti-HAV Total enzyme immunoassay was carried out (Figure 1).
The certified statistical database about Portugal, PORDATA, was used to understand the constitution of the Portuguese population at that time.

Anti-HAV$_{total}$ laboratory results greater or equal than 15 mUL/mL were considered seropositive, revealing previous infection or vaccination.
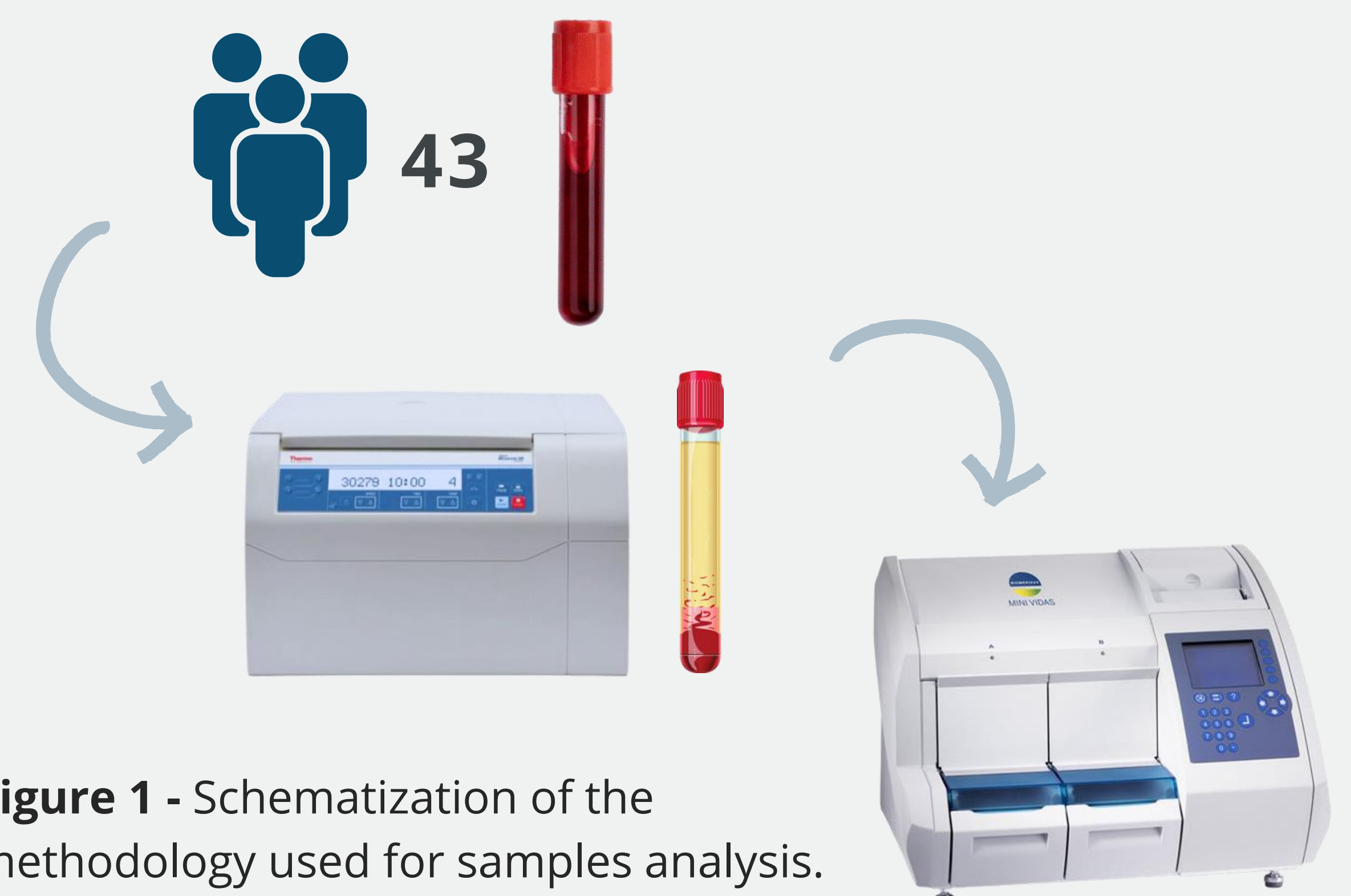

Figure 1 - Schematization of the methodology used for samples analysis.

RESULTS

Females represented 65.12%. Most were aged between 55 and 64 years (32.56%). The Portuguese population also reflected a higher incidence of females (52.43%) but aged over 64 years (23.50%) [7].

The prevalence of anti-HAV$_{total}$ was 60.47%, with emphasis on females (53.85%) and age groups aged over 54 years (46.15% and 34.61%, between 55 and 64 years and over 64 years, respectively). These results are only indicative, therefore have no statistical significance as they result from a convenience sample in which it was not yet possible for us to determine the presence of IgG.

DISCUSSION/CONCLUSIONS

Seropositivity comprised 60.47%. The analysis of these results reveals that the lowest proportion of seropositivity was concentrated in younger people, reaching higher values at ages over 54 years, corroborating what was described in the National Serological Survey, as well as the fact that the seropositivity rate does not present significant differences between female and male, in the different age groups [8].
It can be assumed that Portugal is a country of low endemicity, in agreement with what is considered by the European Centre for Disease Prevention and Control [9].

Since vaccination is not mandatory and due to the low rate of the vaccinated population, it is presumed that most seropositive individuals reflect previous HAV infection, mainly in the presence of IgG.
Thus, it will be interesting to study anti-HAV IgM antibodies in that population, to understand prior exposure to the virus – as a result of infection or vaccination.

REFERENCES

[1] Lazcano-Ponce E., Conde-Gonzalez C., Rojas R., et al. (2013). Seroprevalence of hepatitis A virus in a cross-sectional study in Mexico. *Human Vaccines and Immunotherapeutics*, 9(2), 375–381.
[2] Antunes H., Macedo M., Estrada A. (2004). Prevalência do vírus da hepatite A: Primeiros resultados de baixa endemicidade em Portugal. *Acta Médica Portuguesa*, 219–223.
[3] Gomes A., Vieira C., Outeirinho C., et al. (2022). Relatório de Programa Nacional para as Hepatites Virais. *Direção-Geral da Saúde*, 1-71.
[4] Shapiro C. N., Margolis H.S. (1993). Worldwide epidemiology of hepatitis A Virus infection. *Journal of Hepatology*, 1–14.
[5] Guenifi W., Laouamri S., Lacheheb A. (2017). Changes in prevalence of hepatitis A and associated factors in Setif-Algeria. *Revue d'Epidemiologie et de Sante Publique*, 65(6), 437–442.
[6] Badur S., Blystad H,. Bonanni P., et al. (2011). Viral Hepatitis Prevention Board (VHPB). *WHO*, 19(1), 1-40. Available in https://www.vhpb.org/files/html/Meetings_and_publications/Viral_Hepatitis_Newsletters/vhv19n1.pdf (accessed 12 setembro 2022).
[7] FFMS. (2022). População residente em Portugal em 2021. PORDATA. Available in https://www.pordata.pt/ (accessed 12 setembro 2022).
[8] Martins H. C., Matos R., Almeida L., et al. (2017). Inquérito Serológico Nacional 2015-2016: Doenças Evitáveis por Vacinação. *Instituto Nacional de Saúde Doutor Ricardo Jorge*, 1-184.
[9] European Centre for Disease Prevention and Control. (2016). Hepatitis A virus in the EU/EEA, 1975–2014 a systematic review of seroprevalence and incidence comprising European surveillance data and national vaccination recommendations. *ECDC*, 1-134