

Abstract

Background and Purpose :

Non-alcoholic fatty liver refers to the accumulation of fat in the liver if there is no other secondary factor for fat accumulation in the liver such as alcohol consumption and is currently a growing disease in adults and children. It is also known as the most common liver disease worldwide. Due to the high prevalence of non-alcoholic fatty liver in the population and the low percentage of patients with non-alcoholic steatohepatitis compared to the general population, biopsy is not appropriate for many patients. Like these technologies, transient elastography is an FDA-approved technology that is widely used in the United States and the European Union. The aim of this study was to evaluate transient elastography health technology for the diagnosis of liver fibrosis in patients with nonalcoholic fatty liver disease in terms of safety, efficacy and cost-effectiveness, and to analyze ethical and organizational aspects.

Methods: To evaluate the safety and efficacy of transient elastography compared with liver biopsy, first the PubMed, scopus, Web Of Science and Cochrane citation databases from October 20, 2017 to October 10, 2020 were reviewed and then reviewed. Systematic and meta-analysis were used. It should be noted that the evaluation of the quality of the studies was performed by the CASP checklist version 2018 and after receiving the information required for meta-analysis, STATA software version 13 was used. Cost-effectiveness analysis was used for economic evaluation. The analysis was cost-effective from the perspective of the health system, and the model used was the Markov model. The costs of this section were extracted from the bills of patients referred to Afzalipour Hospital in Kerman and the book of relative values and compared with the costs of liver biopsy in the same hospital. Then, to complete the cost-effectiveness analysis process, the cost reduction method due to equality of consequences was used. Finally, sensitivity analysis was performed on uncertain parameters. To assess the ethical and organizational aspects, a semi-structured questionnaire was used to interview gastroenterologists with snowball sampling and patients with transient elastographic experience. Due to coronary heart disease and with the permission of the participants, the interview was conducted in WhatsApp cyberspace and finally the results were reported using content analysis.

Results : In terms of safety and effectiveness, out of 3227 studies, 5 articles were meta-analyzed. Meta-analysis was performed using the fixed method. The study criterion was I^2 heterogeneity. In cases where I^2 was reported to be more than 50%, the meta-analysis was performed randomly at 95% confidence intervals. The sensitivity and specificity of transient elastography showed that this technology, while non-invasive in the diagnosis of hepatic fibrosis in patients with nonalcoholic fatty liver, is also acceptable. In terms of economic evaluation, the average cost of diagnosing liver fibrosis using transient elastography compared to liver biopsy per year was 653,747,133 Rials and 870,756,985 Rials, respectively. Also, the life expectancy with quality adjustment for both transient elastography and biopsy is 6.56 QALY. Given that the desired result was equal in both strategies, the cost minimization method was used for cost-effective evaluation. In this method, the low-cost strategy is cost-effective, where transient elastography was introduced as the dominant strategy. In the qualitative section, evaluating the ethical aspects of using technology from four ethical principles and evaluating the organizational aspects of organizational evaluation issues extracted from the HTA Core book were examined in three stages. The total number of fluids in the fluid was 7 and the number of internal fluids was 19. In this part, "no harm" in the ethical part and "work process" in the organizational part were the most used.

Conclusion: The results of evaluation of safety, effectiveness, economic, ethical and organizational aspects of transient elastography technology show that transient elastographic technology is safer and similar to liver biopsy. The economic evaluation study also showed that transient elastography is cost-effective and cost-effective in terms of cost-effective analysis due to its lower cost and similar effectiveness. Also, in moral evaluation, transient elastography technology is morally accepted and accepted by the society and does not contradict the moral values of the country. This technology does not pose a significant organizational challenge. According to the obtained results, in order to cover the transient technology of lastography, due to the wide prevalence of the disease and the needs of the country, it needs special attention of managers and health policy makers.

Keywords : transient elastography, liver biopsy, non-alcoholic fatty liver, health technology evaluation



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Title

**Health Technology Assessment of of Transient Elastography Compared to Biopsy
non-Alcoholic Fatty Liver for Diagnosis of Hepatic Fibrosis in Patients with
Disease**

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Thesis No :

Date (2020, 2021)