

Occupational Disease, Treatment Complication, or Both? Chronic Hepatitis C, Latent Tuberculosis Infection, and Isoniazid Hepatotoxicity in a Healthcare Worker

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Abstract

Healthcare workers are exposed to occupational biological hazards, including hepatitis C virus (HCV) and *Mycobacterium tuberculosis*, and the medico-legal assessment of resulting conditions can be complex. We report a 55-year-old nurse with prolonged contact with people who use drugs, diagnosed with chronic hepatitis C in 2005, most likely related to an unrecorded percutaneous exposure in 2003, and cured in 2007. In 2023, following occupational contact tracing, she was diagnosed with latent tuberculosis infection and started isoniazid, developing hepatotoxicity in the fourth month, with recovery after discontinuation. The case raised a medico-legal dilemma: hepatitis C was difficult to recognize as occupational given the missing exposure record; latent tuberculosis infection is not listed in the occupational disease framework; and the hepatotoxicity could represent either a treatment complication or aggravation of prior liver disease. The case highlights the multifactorial nature of occupational assessment and the importance of early, rigorous documentation of exposures.

Keywords: Hepatitis C; Latent tuberculosis infection; Isoniazid; Drug-induced liver injury; Occupational disease; Healthcare workers

Introduction

Healthcare workers are a high-risk group for occupational exposure to biological agents, including bloodborne pathogens such as hepatitis C virus (HCV) and airborne pathogens such as *Mycobacterium tuberculosis* [1,2]. Occupational HCV transmission occurs mainly after percutaneous exposure to infected blood, and the risk is increased by deep injuries and by needle placement in a source patient's vein or artery [1]. Tuberculosis remains an occupational risk for healthcare workers, and screening for Latent Tuberculosis Infection (LTBI) followed by preventive treatment is recommended for those exposed [2,3].

Isoniazid is a standard regimen for LTBI, but hepatotoxicity is its most important adverse effect and is more frequent with increasing age and in the presence of pre-existing liver disease [3,4,5]. When occupational infection, its treatment, and prior clinical history overlap in the same worker, the diagnostic and medico-legal assessment becomes particularly challenging. We report a case that illustrates this overlap and the dilemmas

it poses for occupational medicine, and we discuss the implications for the recognition of occupational disease and for the documentation of occupational exposures.

Case Report

A 55-year-old female nurse was assessed in the occupational health service. She had worked for ten years in direct contact with patients who use drugs, in a specialized treatment unit. A percutaneous blood exposure was reported to have occurred in 2003 but was not formally recorded at the time.

In 2005, she was diagnosed with chronic hepatitis C. She was referred to a specialized treatment unit and received antiviral treatment, achieving a sustained virological response, consistent with cure, in 2007.

In 2023, in the course of occupational contact tracing, she was identified as having had contact with a case of active pulmonary tuberculosis at the workplace. Latent tuberculosis infection was confirmed by a positive Interferon-Gamma Release

Assay (IGRA), and active disease was excluded. Treatment of the latent infection was started with isoniazid 300 mg/day.

In the fourth month of treatment, she developed hepatotoxicity. Isoniazid was discontinued, with subsequent recovery of liver function. The temporal relationship between the introduction of isoniazid and the liver injury, together with recovery after withdrawal, supported a causal analysis of drug-induced liver injury.

Discussion

This case brings together three interrelated conditions in a single healthcare worker: an occupationally acquired chronic hepatitis C infection, a subsequently acquired latent tuberculosis infection, and hepatotoxicity arising during preventive treatment of the latter. Each raises distinct questions for occupational medico-legal assessment.

First, the attribution of hepatitis C as an occupational disease was hindered by the absence of formal notification of the 2003 percutaneous exposure. Although the worker's occupational history, with prolonged direct contact with people who use drugs and a documented reported exposure, was highly consistent with occupational acquisition, the lack of a contemporaneous record weakened the formal chain of evidence [1]. This illustrates how the recognition of occupational disease may depend as much on documentation as on clinical plausibility.

Second, latent tuberculosis infection is not, in itself, contemplated within the legal framework of occupational diseases, even when acquired through a documented workplace exposure. This creates a gap between the occupational origin of the infection and its formal recognition [2,3].

Third, the hepatotoxicity that developed during isoniazid treatment raised the question of whether it should be considered a treatment complication or an aggravation of a pre-existing, occupationally related liver condition. Isoniazid hepatotoxicity is well described, is more frequent with advancing age, and may be influenced by underlying liver disease; the patient's age and history of chronic hepatitis C are relevant to this assessment, even though the infection had been cured years earlier [4,5,6]. Determining the predominant condition to be considered for the purposes of occupational disease recognition is not straightforward when these factors overlap.

Taken together, the case underscores the multifactorial nature of medico-legal assessment in occupational health, which must weigh the interaction between occupational infection, pharmacological treatment, and the worker's prior clinical history. It also highlights the central role of a detailed clinical history and rigorous recording of occupational exposures: early and accurate documentation is essential for later medico-legal evaluation, and its absence can be decisive. Healthcare work-

ers remain continuously exposed to complex, multifactorial biological risks, reinforcing the need for robust occupational health surveillance and reporting systems [1,2].

This case illustrates how occupational infection, its treatment, and prior clinical history may intersect in a single healthcare worker, creating a genuine diagnostic and medico-legal dilemma. Medico-legal assessment in occupational medicine should consider all contributing factors in the genesis of occupational disease, rather than viewing each condition in isolation. The case reinforces two practical messages: the immediate and rigorous notification of occupational exposures is essential for future medico-legal assessment, and healthcare workers require continued protection and surveillance against complex biological risks. Structured documentation and a multidisciplinary approach are key to fair and accurate recognition of occupational disease.

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