

## Review article

# Nuclear Accident Crisis and Liver Disease: A Summary on Evidences

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## Abstract

The present global concern is on the adverse effect due to exposure to nuclides expelled from the disrupted nuclear power plant accident in Japan. The exposure can induce several adverse effects. In this specific brief review, the author summarizes the evidences on the effect on liver. Discussion is focused on several liver diseases.

**Keywords:** Exposure, liver, nuclear

## Introduction

The present global concern is on the adverse effect due to exposure to nuclides expelled from the disrupted nuclear power plant accident in Japan. The destroyed nuclear power plant generated a number of nuclides into the environment and this can lead to the serious contamination.

The exposure to contaminated nuclides can induce several adverse effects. Several organ systems can be affected. In this specific brief review, the author summarizes the evidences on the effect on liver. Discussion is focused on several liver diseases.

## Accumulation of Nuclides in Liver Cell

After exposure to leaked nuclides, the accumulation of nuclides in liver cell can be observed. There are many reports in the previous similar situation of the nuclear crisis, the Chernobyl problem. According to a study on death bodies after Chernobyl situation, the accumulation in liver cell is very high. It is in the 2<sup>nd</sup> rank after

skeletal muscle cell.<sup>[1]</sup> Indeed, this is concordant with several reports on detection of nuclides in liver cells of many animals.<sup>[2-4]</sup> Furthermore, the disturbance on the molecular structures and deoxyribonucleic acid within the cells is also reported.<sup>[3,4]</sup> Hence, it is no doubt that exposure can lead to liver accumulation. However, in a long-term observation, absence of sclerotic lesions in the liver is reported.<sup>[5]</sup> Hypervolemia of hepatic circulation due to hyperkinetic type of central hemodynamics is common in exposed subjects.<sup>[5]</sup>

## Hepatitis

Hepatitis is observed as an important problem in exposed subjects in Chernobyl crisis.<sup>[6]</sup> Elevation of alanine aminotransferase, asparagine aminotransferase, gamma- glutamyl transpeptidase, alkaline phosphatase and lactate dehydrogenase can be seen in those patients.<sup>[6]</sup> The disturbance of antioxidant system in those patients can result in chronic hepatitis.<sup>[7,8]</sup> The hepatitis is usually persisted and relating to duodenal ulcer.<sup>[7-9]</sup> A study by Komarenko *et al.* noted that changes in the L-serine and L-threonine dehydrogenase activities could be the sign for hepatitis in the exposed subjects.<sup>[10]</sup>

## Biliary Tract Disorders

In addition to hepatitis, biliary tract disorders are also common in the exposed subjects. The problems include chronic cholecystitis, angiocholitis, dyskinesias of the biliary ducts.<sup>[11]</sup>

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