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H1N1 Vaccine May Cause Hepatic Dysfunction

Ferdane Sapmaz[1*] and Sebahat Başyiğit[1]

[1]Department of Gastroenterology, Keçiören Training and Education Hospital, Keçiören, Ankara, Turkey.

Authors' contributions

This work was carried out in collaboration between both authors. Author FS wrote the draft of the manuscript. Author FS managed the literature searches. Author SB managed literature searches and contributed to the correction of the draft. Author SB provided the case and supervised the work. Both authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Aim: In this case, we reported an unusual side effect which may be related to adjuvant–H1N1 vaccine.
Case Report: A sixty-three year-old man was admitted to our hospital with fever, nausea, vomiting and fatigue 15 days after his immunization against H1N1 virus. Laboratory findings were, aspartate aminotransferase (AST):620 U/L, alanine aminotransferase (ALT): 561 U/L, alkaline phosphatase (ALP):152 U/L, gamma-glutamyl transferase (GGT): 482 U/L. His clinical symptoms resolved within two days. His elevated liver function tests reduced gradually and completely normalized on day 6 of his hospitalization.
Discussion and Conclusion: H1N1 vaccination may cause increases in liver enzymes and it should be considered in differential diagnosis of abnormal liver function tests.

Keywords: H1N1 vaccine; hepatotoxicity; liver function tests.

**Corresponding author: E-mail: ferda-sapmaz@hotmail.com;*

1. INTRODUCTION

H1N1 vaccine is an inactive split viral vaccine which contains thiomersal as a preservative [1]. Vaccine-induced immunity occurs within about 10 days. The most frequent side effects are pain and tenderness localized at the injection site by 45%, and headache, myalgia, fatigue by 46%. Lymphadenopathy, thrombocytopenia, Guillain-Barre syndrome and some other neurological side effects have been reported rarely [2]. In this case, we reported a case with abnormal liver functions which may be related to adjuvant-H1N1 vaccine.

2. CASE REPORT

A Sixty-three year-old male presented with one day history of fever, nausea, vomiting, and fatigue. He had history of H1N1 immunization (Focetria®, Novartis, contains 7.5 micrograms of viral antigen and MF59 squalene as adjuvant) 15 days before his hospital admission. He described two days fever after vaccination. He was using 5 mg ramipril once a day for five years because of hypertension and he had no use of any other drug, alcohol or other substances. His physical examination was normal. Laboratory findings were, aspartate aminotransferase (AST): 620 U/L, alanine aminotransferase (ALT): 561 U/L, alkaline phosphatase (ALP):152 U/L, gamma-glutamyl transferase (GGT): 482 U/L, Albumin: 3.6 g/dL, C-reactive protein (CRP): 0.8 mg/dL. Complete blood count and other biochemical parameters were normal. He was hospital-lized. His blood cultures obtained and naso-pharyngial swab samples were sent to reference laboratory for H1N1 and seasonal influenza virus tests. Work-up for the reason of the patient's impaired liver functions was made also. His test results were as follows: Hepatitis B Surface Antigen (-), antibody to hepatitis B core immunoglobulin M (IgM) (-), antibody to hepatitis C virus (-), antibody to hepatitis A virus IgM (-), antibody to hepatitis E virus (-), antibody to cytomegalovirus IgM (-), antibody to Epstein-Barr virus IgM (-), venereal disease research laboratory (VDRL) (-), antibody to herpes simplex virus IgM (-), Anti rubella IgM (-), Anti toxo IgM (-), IgA, M, and G levels were in normal range, antinuclear antibody (-), anti-double stranded DNA, Anti dsDNA (-), Anti-mitochondrial antibodies (-), liver kidney microsomal antibody (-), anti-smooth muscle antibody (-), urine Legionella antigen (-), H1N1 polymerase chain reaction (PCR) (-), seasonal influenza PCR (-), Brucella rose bengal and tube agglutination tests (-), and seruloplasmin level was normal. Hepatobiliary ultrasonography of the patient was normal. The patient was taken to bed rest and administered intravenous hydration. His clinical symptoms resolved within two days. His elevated liver function tests reduced gradually and completely normalized on day 6 of his hospitalization.

3. DISCUSSION

H1N1 influenza also called Swine Flu, is caused by a new strain of the influenza virus, and it has spread through many countries. Adverse reactions were reported generally mild or moderate and resolved themselves after 72 hours.

In our patient, the possible reason of his impaired liver function was thought as hepatic toxicity and history of drug using were questioned. A part of metabolism of the ramipril, which the patient received continuously, occurs in the liver, and increase of liver aminotransferases levels due to ramipril had been reported before [3,4]. However, the patient has been using this drug for a long time and normalization of the liver function tests despite the continuance of ramipril showed that the current situation of the patient could not be explained with ramipril.

It has been reported that human influenza A (H1N1) virus infection and the attenuated vaccine may cause increases in liver function tests [5].

Liver function tests may elevate after various vaccine administrations. Liver dysfunction related with hepatitis A and B vaccines due to autoimmune or acute hepatitis had been reported earlier [6,7,8]. It has also been reported that human papilloma virus vaccine may cause abnormal liver function tests [9].

Recently, two cases of hepatic dysfunction which occurred following H1N1 vaccination were reported in a 28-month-old child [10] and 56 year-old woman [11].

4. CONCLUSION

Although, we cannot confirm the exact relationship between the liver dysfunction and fever of our patient and the H1N1 vaccine, we proposed the possible hepatotoxic effect of the vaccine or viral hepatitis may cause this situation. We recommend that H1N1 vaccination

should be considered in differential diagnosis of abnormal liver function tests.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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