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Brief Report

Patatin-like phospholipase domain-containing protein 3 polymorphism and hepatic cell disorder; gene ontology analysis

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Abstract

Patatin-like phospholipase domain-containing protein 3 (PNPLA3) is an important molecule that is mentioned for the pathogenesis of the liver disorders including to hepatocellular carcinoma. The immunopathogenesis via migration of immune cells is reported in the PNPLA3 variant. Here, the authors perform a standard gene ontology analysis on the PNPLA3 I148M. Comparing to the naïve molecule, gene ontology analysis showed no significant difference of biological function of PNPLA3 I148M variant. This analysis can imply that the actual underlying pathogenesis of PNPLA3 I148M variant related liver disorder is due to other process rather than the direct functional change.

Keywords: Patatin-like phospholipase domain-containing protein, Ontology, Liver, Immunopathogenesis, Hepatocellular carcinoma

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Introduction

Liver disease including to hepatocellular carcinoma is still the big public health problem in the present day. The effect of the genetic background on the liver disease pattern is interesting. Several biomolecules are mentioned for the relationship with the pathogenesis of the liver disorder. Patatin-like phospholipase domain-containing protein 3 (PNPLA3) is an important molecule that is mentioned for the pathogenesis of the liver disorders including to hepatocellular carcinoma (1,2).

The immunopathogenesis via migration of immune cells is reported in the PNPLA3 variant (3,4).

Objectives

Here, the authors perform a standard gene ontology analysis on the PNPLA3 I148M. Comparing to the naïve molecule, gene ontology analysis showed no significant difference of biological function of PNPLA3 I148M variant.

Materials and Methods

This is a genetic ontology study. The standard gene ontology technique as used in the previous publications was used in the present analysis (3-6). The focused molecule for ontology analysis is PNPLA3. The genetic sequence of naïve PNPLA3 was primarily determined and used as primary template. The simulation was done to derive the second template for further gene ontology analysis for the focused variant, PNPLA3 I148M**.** The derived two templates were further studied. For both naïve and mutated molecule, the ontology classification and prediction were done.

Core tip
Patatin-like phospholipase domain-containing protein 3 (PNPLA3) is an important molecule that is mentioned for the pathogenesis of the liver disorders including to hepatocellular carcinoma.

Results

According to the gene ontology analysis, the derived molecular function and biological process for naïve and PNPLA3 I148M variant are shown in Table 1. The same molecular function and biological process were derived from gene ontology analysis for both naïve and PNPLA3 I148M variant.

Discussion

Patatin-like phospholipase domain-containing protein 3 is expressed in the hepatic tissue and is involved in liver bio-metabolism (1,2). Patatin-like phospholipase domain-containing protein 3 I148M variant is an

Table 1. Identified molecular function and biological process of naïve and PNPLA3 I148M variant.

	Naïve PNPLA3	PNPLA3 I148M variant
Molecular function	Acylglycerol O-acyltransferase activity, triglyceride lipase activity	acyl glycerol O-acyltransferase activity, triglyceride lipase activity
Biological process	Acylglycerol acyl-chain remodeling	acyl glycerol acyl-chain remodeling

important polymorphism of PNPLA3 that is mentioned for the clinical relationship with hepatic steatosis and its progression to chronic hepatitis, liver fibrosis, and hepatocellular carcinoma (7). In PNPLA3 I148M variant, abnormal apoptosis is observable (8). Also, the immunoglobulin-binding protein is higher in PNPLA3 I148M variant comparing to naïve case (8).

In this study, the authors use standard ontology analysis to comparatively assess the PNPLA3 naïve and PNPLA3 I148M variant. Of interest, there is no signification different identified molecular function and biological process in both groups. This can imply that there is no significant alteration of basic molecular bio-mechanism in PNPLA3 I148M variant. The observed pathological and immunopathological processes in the previous studies should be due to other underlying mechanisms rather than functional change due to PNPLA3 I148M variant. The possible concomitant effect due to other genetic polymorphism and epigenetic factor should be further studied for better understanding on the interrelationship between PNPLA3 and natural history of liver disease and cancer (9).

Conclusion

This analysis can imply that the actual underlying pathogenesis of PNPLA3 I148M variant related liver disorder is due to other process rather than the direct functional change.

Authors' contribution

Both authors wrote the manuscript equally.

Conflict of interests

The authors declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, misconduct, data fabrication, falsification, double publication or submission, redundancy) have been completely observed by the authors.

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