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Review

A toxicologist guide to the diagnostic interpretation of hepatic biochemical parameters

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Abstract

Assessing liver damage in basic toxicology research and in preclinical toxicity testing is usually evaluated by serum biochemical parameters prior to confirmation by histopathology. With the advent of newer methods such as genomics and proteomics, there is increased enthusiasm to generate â€œnovelâ€ predictive markers to detect liver pathology even before the alterations in clinical and histopathology parameters occur. However, serum biochemical parameters (clinical pathology) when employed accurately, can provide important and useful information in assessing not only the extent and severity of liver damage, but also the type of liver damage (membrane injury versus cholestasis and hepatic function). In order to accurately detect hepatobiliary pathologies, it is important to have a basic understanding of liver associated clinical pathology

parameters with reference to their exact location, serum half-lives, tissue concentration gradient and species differences. Such understanding as discussed in this article will enable a toxicologist to identify commonly encountered toxic hepatic lesions such as necrosis, cholestasis and compromised liver function by hepatic-associated clinical pathology parameters. In addition, toxicologists will have a better grasp to effectively communicate their clinical pathology findings and interpretations to the target audiences.

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Abbreviations

ALT, alanine aminotransferase; ALP, alkaline phosphatase; APTT, activated partial thromboplastin time; AST, aspartate aminotransferase; BSP, sulphobromophthalein; CBC, complete blood count; GGT, gamma glutamyltransferase; GLDH, glutamate dehydrogenase; ICG, indocyanine green; LDH, lactate dehydrogenase; 5[1]NT, 5[1]nucleotidase; OCT, ornithine carbamyltransferase; PT, prothrombin time; SDH, sorbital dehydrogenase; UDPGT; uridine diphosphate glucuronyltransferase; UGT1A1, uridine diphosphate glucuronosyltransferase

Keywords

Clinical pathology; Liver; Toxicity; Transaminases

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