Hepatic Arterial Variant Anatomy and Predisposition to Hepatocellular Carcinoma

Hayley Moss¹, Ayana Wilson¹, Melissa Potts²

¹University of Louisville School of Medicine, Louisville, KY, 40202, USA
²Department of Radiology, University of Louisville, Louisville, KY, 40202, USA

Abstract

Background: Blood supply to the liver can vary drastically from patient to patient. In order to classify these differences, hepatic arterial variants are categorized according to Michel’s Classification (Types I-X). Characterizing the hepatic anatomy is critical for the success of procedures such as liver transplants and radioembolization and chemoembolization of arteries supplying hepatic tumors. Although a classification system exists, the frequency of each hepatic variant type has not been well-documented. These variations in anatomy could possibly predispose individuals to hepatic malignancies.

Hypothesis and Objective: Frequency of each type of hepatic arterial variant could be different from that noted in previous papers, notably Michels 1966 and Hiatt 1994. The goal of this project was to determine these frequencies and compare them to the values reported in the Michels and Hiatt papers to determine if certain hepatic arterial variants predispose individuals to hepatocellular carcinomas.

Methods: Mesenteric angiograms from 281 patients whose procedural dates ranged 2009-2019 were interpreted and recorded in accordance with Michel’s Classification. The angiograms obtained were from records of patients diagnosed with primary or metastatic liver cancer who were undergoing radiologic workup before radioembolization of arteries supplying the tumor(s). The frequencies of each type were then recorded and compared to the data in the Hiatt and Michels papers.

Results: Variance in the frequencies of each type was noted when compared to data previously reported in the Hiatt and Michels papers. The data from this project aligned closely with that reported in the Hiatt and Michels papers.

Conclusions: The similarity between this project's data and that from the Hiatt paper also closely matched recorded data from this project. The data from this project agreed with data reported in the Hiatt paper. Specific hepatic anatomic classifications did not correlate with higher likelihood of hepatocellular carcinoma.

References


Acknowledgements

Thanks are due to Dr. Cameron Ghazi for his help with this project. This research was supported by a grant from the National Institute of Health/National Cancer Institute R25-CA134283 and the University of Louisville Cancer Education Program.