

A CAUSAL ANALYSIS OF THE EFFECT OF ROUTINE ABDOMINAL IMAGING ON RISK OF HEPATOCELLULAR CARCINOMA FOR PEOPLE LIVING WITH CHRONIC HEPATITIS C

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Background:

Hepatocellular carcinoma (HCC) is a long-term outcome of hepatitis C virus (HCV) infection, most commonly in cirrhotic patients. Given high HCC mortality, guidelines recommend screening HCV patients who have cirrhosis for HCC twice per year using abdominal imaging. Guidelines do not recommend HCC screening in patients without cirrhosis. We aimed to estimate the longitudinal association of abdominal imaging on HCC risk using causal inference methods.

Methods:

We used a dataset of all HCV patients receiving care in a tertiary healthcare system since 2009, restricting to adults with no indications of cirrhosis (FIB-4 score < 3.25) and no HCC at study start (n = 1628). Missing race, socioeconomic status (SES) and FIB-4 scores were imputed using multiple imputation. Using G-computation, IPTW, and LTMLE estimators with SuperLearner, we estimated the average treatment effect on HCC diagnosis in year 5 assuming all patients had abdominal imaging every year for the 4 prior years, compared to all patients not having abdominal imaging during that time.

Results:

G-computation was our least biased estimator per a simulation of 100,000 patients, and on our observed data produced a risk difference of 1.102 (95%CI: -0.913 – 3.116). This indicates a 1.1% reduction in HCC risk over 5 years when receiving abdominal imaging at least once annually for the 4 prior years, compared to not receiving abdominal imaging, after controlling for cirrhosis, number of primary care or hepatology visits, sex, race, and SES.

Conclusion:

This is a clinically meaningful finding given that we excluded patients with evidence of cirrhosis at baseline and only followed patients for 5 years. Our data represents a number needed to treat (NNT) of 91: for every 91 HCV patients who receive annual abdominal imaging despite no evidence of cirrhosis at baseline, 1 case of HCC can be prevented over only 5 years.

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