Suboptimal Surveillance for and Knowledge of Hepatocellular Carcinoma Among Primary Care Providers

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BACKGROUND & AIMS: A large proportion of patients with cirrhosis are seen only by their primary care provider (PCP). Surveillance for hepatocellular carcinoma (HCC) therefore depends on PCPs in these cases. We aimed to assess PCP knowledge and practice of HCC surveillance.

METHODS: We contacted a random sample of 1000 North Carolina PCPs by mail. All PCPs contacted received an introductory letter followed by a 12-item questionnaire addressing HCC surveillance knowledge and practice.

RESULTS: A total of 391 PCPs (39%) completed the survey; 89% saw patients with cirrhosis in their practice, but only 45% screened for HCC. Among PCPs who screened for HCC, the most common methods were ultrasound analysis and measurement of α-fetoprotein level (66%). Reasons for surveillance included supported by evidence (72%), recommended by medical societies (42%), and malpractice liability for not performing surveillance (26%). Of PCPs who did not screen, 84% referred to gastroenterologists for surveillance decisions, 24% were unaware of recommendations, 8% were uncertain of the benefits, and 8% were concerned about cost. Hepatic resection and liver transplantation were identified as effective therapies by 67% and 56% of PCPs, respectively, but all other effective therapies were identified by less than half (transarterial chemoembolization by 42%, radiofrequency ablation by 35%, and sorafenib by 26%). The ability to identify at least 1 effective therapy was associated independently with surveillance (odds ratio, 2.1; 95% confidence interval, 1.1–4.0).

CONCLUSIONS: Most PCPs see patients with cirrhosis, but only a minority screen for HCC. PCP knowledge of effective HCC therapy options is suboptimal. Efforts to enlist PCPs in HCC surveillance may be best served by increasing their knowledge of effective therapies.

Keywords: Therapy; Screening; Hepatitis C; Hepatitis B; Cirrhosis.

Hepatocellular carcinoma surveillance is recommended by all 3 major hepatology societies.[1–3] Nevertheless, surveillance rates remain well below 50%, and in some populations as low as 12%.[4–7] Among the many steps needed for surveillance to be accomplished, physician education and incorporation of surveillance into their practice are critical. As expected, hepatologists and gastroenterologists tend to believe in surveillance and are more likely to order it routinely for their cirrhotic patients,[5,7] but only 20% to 50% of such patients are seen by such subspecialists.[7,8] Primary care providers (PCPs) see most of the remainder.

Therefore, if surveillance is to have any chance of reaching more than 50% of cirrhosis patients, enlistment of PCPs will be necessary. Only 3 studies have investigated the practice and knowledge of hepatocellular carcinoma (HCC) surveillance among PCPs and these 3 studies focused primarily on PCPs who see a high number of Asian patients or on surveillance for viral hepatitis rather than HCC surveillance.[9–11] Therefore, we sampled PCPs from the entire North Carolina Medical Board database and limited our questionnaire to HCC surveillance only.

Methods

Institutional Review of Research

Our research project and protocol were reviewed and approved by the University of North Carolina Institutional Review Board before initiating this study.

Subjects

We used the North Carolina Medical Board database to identify practicing PCPs (physicians and doctors of osteopathy) in North Carolina. A random sample of 1000 PCPs was identified. This sample represented 14% of North Carolina PCPs.[12,13]

Survey

Survey methodology was based on the tailored design method.[14] All subjects received an introductory letter, followed by the questionnaire in a separate mailing. The questionnaire consisted of 8 items addressing knowledge and use of HCC surveillance guidelines, as well as identification of HCC therapies. Basic demographics and practice information requested was limited to gender, years in practice, major affiliations (eg, academic facility, Veterans Affairs, private practice), and their ability to see Medicaid-covered patients. We purposely did not request more specific information that would lengthen the questionnaire, compromise anonymity, and potentially decrease the response rate. Therefore, we did not collect information on practice location, type of service area (rural vs urban), training or specific type of practice (ie, group vs solo, family practice vs internal medicine). Such limiting of variables did not allow us to construct a conceptual behavioral model for the decision to recommend surveillance. Instead, we focused on the self-reported rate of surveillance, and the modality and interval recommended. We also asked about knowledge of HCC therapies because they have changed substantially in the past decade and remain a primary justification for surveillance. No pretesting or validation of this brief survey were performed. A $10 cash incentive was included to reduce nonresponse bias and was given regardless of whether the PCP completed the questionnaire or not. A reminder/gratitude postcard was mailed to all subjects, followed by the mailing of a second questionnaire for nonresponders. An addressed return envelope with prepaid postage was included.

To ensure anonymity, all questionnaires were given an alphanumeric code. The master key linking the code to the subject name was used only at the time of mailing and receipt portion of the study to determine who should receive a second-chance mailing. Data collection (receipt of questionnaires) was closed 90 days after the last mailing was completed. Thereafter, the master key was destroyed and no further questionnaires were collected or mailed out.

Analysis

Demographic, practice information, and survey responses were analyzed using basic descriptive statistics (eg, means, medians, proportions, standard deviations).

We used the Pearson chi-square and t tests where appropriate to compare PCPs who screened and those who did not. Logistic regression was used to identify independent variables associated with surveillance.

Results

Subjects: Primary Care Providers

Of the 1000 PCPs to whom we mailed letters and questionnaires, 391 (39%) completed the questionnaire and mailed it back to us. Two PCPs answered questions in an incongruent or unclear manner and had to be discarded (1 PCP indicated not seeing cirrhotic patients yet performed surveillance; another did not answer whether they saw cirrhotic patients but indicated they do not screen). Characteristics of the remaining 389 PCPs are shown in Table 1. The vast majority was in private practice and saw Medicaid patients. Nearly 90% saw cirrhotic patients in their practices.

Hepatocellular Carcinoma Surveillance

Of the 345 PCPs who saw cirrhotic patients, only 45% recommended HCC surveillance. There were no significant differences between those PCPs who do recommend surveillance (n = 156) from those who do not (n = 189) in terms of gender years in practice, practice affiliation, and whether they see Medicaid patients. The most common means of surveillance used was liver ultrasound and α-fetoprotein (AFP) measurement (Figure 1). The most common interval for surveillance was 12 months (Figure 2). Nearly three quarters of those who provide surveillance do so because they believed evidence supported it (Table 2). When asked to identify barriers to surveillance, 54% identified poor patient adherence and 53% identified patient financial constraints, 49% identified lack of insurance, and 32% identified insurance constraints on coverage. Only 5% identified lack of available surveillance services (eg, radiology) as a barrier.

Among those who do not recommend surveillance, the vast majority (84%) defer to subspecialists to decide

Table 1. Characteristics of Primary Care Providers (N = 389)

Characteristic	
Male, n (%)	234 (60.2)
Years in practice, mean (SD)	22 (9.9)
Primary affiliation, n (%)	
Private practice	313 (80.5)
Academic setting	47 (12.1)
Veterans Affairs hospital or clinic	13 (3.3)
Health maintenance organization	4 (1.0)
Other (not specified by respondent)	12 (3.1)
Encounter cirrhotic patients in practice, n (%)	345 (88.7)