

Poor Adherence to Hepatocellular Carcinoma Screening in a Cohort of Cirrhotic Patients After Hepatitis C Cure

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Introduction

The availability of curative therapies for hepatitis c virus (HCV) infection has created a unique opportunity to improve clinical programming across the entire cascade of care.

After HCV cure, there remains a substantial risk of developing hepatocellular carcinoma (HCC) in cirrhotic patients.^{1,2} Current guidelines support screening all cirrhotic patients for HCC with liver imaging at 6 month intervals.^{3,4}

As screening and early detection greatly improves HCC prognosis, it is important to understand factors influencing adherence to post sustained virologic response (SVR) care, especially in populations at risk of loss to follow-up.²

Aim: To evaluate adherence to HCC screening at 6-month intervals in a cohort of cirrhotic patients cured of HCV.

Methods and Materials

Study Design:

Retrospective cohort study.

Population and Inclusion Criteria:

The HEpatitis C positive and At-Risk (HEAR) Database was established in April 2014. Enrolling institutions include an academic tertiary care centre, community hospitals and addictions clinics in New Brunswick, Canada.

For this study, all patients enrolled in the HEAR Database from April 2014 to April 2016 with cirrhosis (confirmed by elastography/biopsy) & HCV cure (achieving SVR12-weeks post-treatment) were included for analysis.

Outcome Analysis:

Electronic health records were reviewed for liver imaging during 6-month intervals after enrolment to February 28, 2018. Patients were categorized as (1) receiving all follow-up at 6-month intervals, and (2) receiving at least 1 liver image during follow-up.

Secondary analysis described basic demographics, imaging characteristics and patient outcomes. Univariate and multivariate odds ratios were calculated for variables which may impact HCC surveillance.

Results

A total of 49 cirrhotic patients were included with a mean follow-up time of 845.6 days (range 219-1043).

HCC Surveillance Screening Post-SVR:

- 28/49 (57.1%) had at least 1 imaging test
- 18/49 (36.7%) had 50% of the recommended number of repeat imaging tests
- 21/49 (42.9%) had none of the recommended number of repeat imaging tests
- 4/49 (10.6%) had all of the expected number of repeat imaging tests

In univariate analysis, individuals under age 60 years, those incarcerated or unemployed were significantly less likely to having any imaging performed post-SVR; however, multivariate analysis did not show any single factor to be predictive of HCC surveillance. Of the 28 patients who received at least 1 liver image, 3 (10.7%) had confirmed HCC.

Imaging modalities included:

- 80/95 (84.2%) Ultrasound
- 11/95 (11.6%) Magnetic Resonance Imaging (MRI)
- 4/95 (4.2%) Computed Tomography (CT)

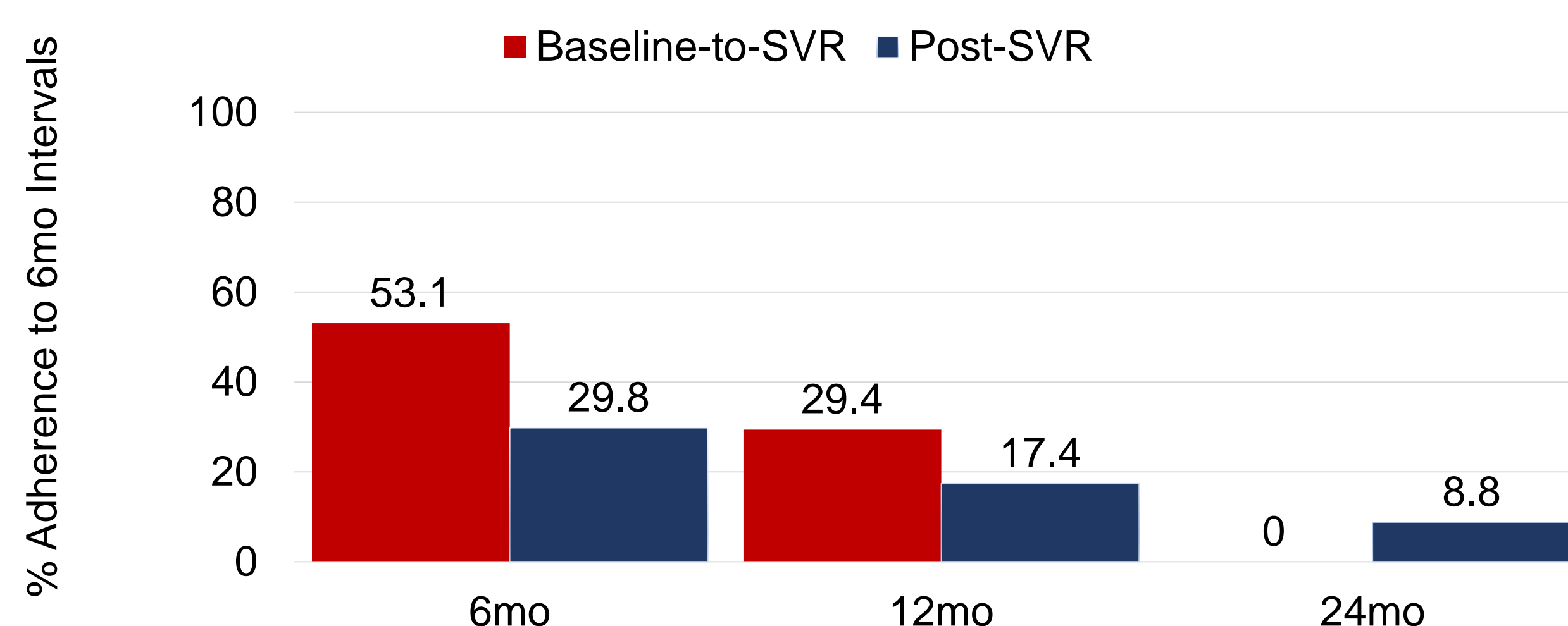


Figure 1. Proportion of Cirrhotic Patients Cured of HCV Receiving HCC Screening at 6 Month Intervals

Table 1. Basic Demographics of Cirrhotic Patients Cured of HCV Stratified by the Presence of HCC Screening Post-SVR

Variable	Some post-SVR imaging completed % (n)	No post-SVR imaging completed % (n)	Crude Odds Ratio (95% CI) ¹	p-value ¹	Adjusted OR (95% CI) ²
Age (yrs)					
< 60	53.6% (15)	85.7% (18)	5.20	0.030	2.07
≥ 60	46.4% (13)	14.3% (3)	(1.09-32.7)		(0.59-7.23)
Gender					
Male	74.1% (20)	75.0% (15)	1.05		
Female	25.9% (7)	25.0% (5)	(0.23-5.08)	1.000	--
Ethnicity					
Caucasian	92.6% (25)	85.7% (18)	0.48	0.641	--
Non-Caucasian	7.4% (2)	14.3% (3)	(0.04-4.72)		
Incarcerated					
Yes	3.7% (1)	28.6% (6)	0.96	0.034	0.52
No	96.3% (26)	71.4% (15)	(0.00-0.95)		(0.11-2.43)
Injection Drug Use					
No	45.5% (10)	35.3% (6)	0.65	0.744	--
Yes ³	54.5% (12)	64.7% (11)	(0.14-2.86)		
Education					
< Grade 12/GED	36.0% (9)	56.6% (10)	2.22	0.230	--
≥ Grade 12/GED	64.0% (16)	44.4% (8)	(0.55-9.15)		
Employment					
Employed/Retired	54.2% (13)	19.1% (4)	5.02	0.030	3.60
Unemployed	45.8% (11)	80.9% (17)	(1.12-25.87)		(0.86-15.10)

1. Calculated using Fisher's Exact tests

2. Adjusted OR determined using logistic regression model including variables appearing statistically significant (crude OR includes 1.00) on univariate analysis.

3. Indicates current or past use.

Table 2. Imaging Findings and Patient Outcomes in Cirrhotic Patients Cured of HCV Undergoing HCC Surveillance

Imaging Findings (N=58 images)	n (%)
New finding suspicious for HCC	9 (15.5)
New HCC confirmed	3 (5.2)
Death (N=49 Patients)	
Total	n (%)
Total	3 (6.1)
Attributable to liver disease	1 (2.0)

Graphic 1. HCC Screening among Vulnerable Groups Requires Further Study



Conclusions

Sub-optimal engagement in HCC surveillance was identified in a cohort of cirrhotic patients after HCV cure.

Results did indicate higher percentages not receiving imaging follow-up among injection drug users, prisoners, unemployed persons and those with less education, but the small numbers limited the power of the study.

Comprehensive strategies to ensure post SVR clinical care among cirrhotic patients are essential for early detection of HCC.

Future research is needed to explore strategies to increase adherence to HCC screening guidelines in cirrhotic patients, especially for vulnerable populations.

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Dr. Smyth reports grants and personal fees from Merck, Gilead and Abbvie. Ms. Materniak reports affiliation with an outside non-profit organization who receives grants and/or sponsorships from Abbvie, Gilead, and Merck. No pharmaceutical grants were received in the development of this study.

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