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Change in Alanine Aminotransferase May Serve as an Alternative for Sustained Virologic Response (SVR) in Low-and-Middle-Income Countries

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Introduction

- Hepatitis C Virus (HCV) has a global prevalence of 71 million cases with 75% coming from low-and-middle-income countries (LMIC)
- Access to direct-acting antiviral (DAA) medications continues to increase globally, but the availability of diagnostics remains a barrier, especially in LMIC
- The gold standard to determine HCV cure is the demonstration of SVR with quantitative HCV RNA levels via polymerase chain reaction (PCR) at least 12 weeks after completion of treatment
- Confirmatory HCV-PCR assays are expensive; in Mumbai, the price for liver function tests is 550 Rupees while the prices for HCV-PCR assays are 2000 Rupees
- Our aim was to determine if change in ALT can serve as a surrogate marker for SVR

Methods

- Retrospective cohort study of 149 patients in Mumbai, India
- Received treatment between 2015-2021
- All patients treated with DAA approved by FDA equivalent in India, brought back for follow-up 12 weeks after completion of treatment when they had liver function tests and HCV-PCR assays

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Results

- 149 patients included in the study, 128 achieved SVR (86%) and 21 (14%) did not
- Genotype 3 was most common in the cohort
- No significant differences in SVR across genotypes, diabetes status, hyperlipidemia, or thyroid disease
- The change in ALT between initiation and completion of therapy was significantly different based on SVR ($p < 0.01$)
- Secondary analysis showed that the greater the change in ALT, the higher the positive predictive value of achieving SVR
- Additional analysis showed that a lower absolute value of ALT after completion of treatment showed higher positive predictive value

Discussion

- LMIC with high HCV burden face barriers to diagnose SVR via HCV-PCR, and can benefit using ALT as a surrogate marker
- This is a novel finding and opens new opportunities for monitoring SVR
- This finding can help in the treatment of HCV in LMIC where liver function tests are cheaper
- Given that this study was conducted in India, it is limited in its generalizability across different ethnicities and genotypes
- Further research is needed, especially since this population was ethnically homogeneous
- Future projects should be conducted in sub-Saharan Africa

Variable	Overall (n=149)	SVR (n=128)	No SVR (n=21)	P-value
Change in ALT (mean ± SD)	41.8 ± 55	46.7 ± 55.9	11.5 ± 51	<0.01

Variable	Overall (n=149)	SVR (n=128)	No SVR (n=21)	P-value
Patients with change in ALT > 10 (n, %)	87 (58.4)	80 (62.5)	7 (33.3)	<0.01

ALT Values after completing treatment	No SVR (n=16)	SVR (n=108)	PPV	P-value
				<0.01
0-20	1 (6.2)	42 (38.9)	97.7	
20-40	6 (37.5)	47 (43.5)	88.7	
>40	9 (56.3)	19 (17.6)	67.9	