Utility of HCV Core Antigen for the Diagnosis of Acute HCV in High-Risk Individuals

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Background

- Current EASL guidelines suggest regular anti-HCV screening, with additional HCV-RNA testing for high-risk individuals with unexplained elevated serum aminotransferases.
- HCV core antigen (HCV-cAg) offers an alternative to HCV-RNA testing to confirm current HCV infection, with a similar window period.
- We describe the use of HCV-cAg testing for early diagnosis of acute HCV in high-risk individuals attending for sexual health screening at a large central London Sexual Health/HIV clinic.

Method

- Architect HCV-cAg testing (Abbott Diagnostics) was introduced in May 2015 in our service to screen all high-risk (MSM/IDU/HIV+) patients attending for a sexual health screen or HIV review.
- High-risk HIV+ patients were offered 3 monthly screening in addition to routine 6-monthly bloods (inclusive of liver function tests).
- All HCV-cAg positive samples were tested for HCV-RNA.
- We reviewed all acute HCV diagnoses detected by HCV-cAg testing from May 2015 – July 2018.
- Acute HCV infection/re-infection was defined as a new positive HCV-cAg confirmed with a positive HCV-RNA and associated with:
  - Unexplained transaminitis and/or a negative anti-HCV;
  - And/or a negative HCV-cAg in the previous 12 weeks.
- Data were collected on patient demographics, HIV status, HCV reinfection, HCV genotype, anti-HCV and seroconversion, transmission risk factors, serum ALT and concurrent STIs.

Table: Summary of results

Year	2015-2016	2016 –2017	2017-2018	Total
	N (%)			
Number of cases	**29**	**33**	**21**	**83**
Route of transmission				
MSM	10 (34)	21 (64)	10 (48)	41 (49)
MSM + Chems	15 (52)	7 (21)	0	22 (27)
MSM + Chems + IDU	4 (14)	5 (15)	10 (48)	19 (23)
Heterosexual + IDU	0	0	1 (4)	1 (1)
HIV+	24 (83)	29 (88)	15 (71)	68 (82)
Alcohol excess	5 (7)	3 (10)	2 (10)	10 (13)
HCV reinfection	2 (7)	3 (10)	7 (33)	12 (14)
HCV genotype				
1a	23 (79)	26 (79)	17 (80)	66 (80)
1b	1 (3)	1 (3)	2 (10)	4 (5)
3	2 (7)	4 (12)	0	6 (7)
4	3 (10)	2 (6)	2 (10)	7 (8)
Median ALT IU/l at HCV Dx (IQR)	138 (67-389)	146 (70-257)	88 (50-230)	138 (67-313)
ALT<50 IU/l at HCV Dx	6 (21)	2(6)	6 (26)	14 (17)
Median peak ALT IU/l (IQR)	462 (251-833)	549 (269-931)	397 (153-1191)	478.5 (216-889)
Median time from HCV Dx to ALT peak, days (IQR)	36 (7-79)	37 (0-104)	35 (16-64)	36 (7-74)
STI results				
Negative	18 (62)	20 (65)	15 (71)	53 (65)
CT &/or GC	6 (20)	9 (29)	5 (24)	20 (24)
LGV	1 (3)	0	0	1 (1)
Syphilis	2 (7)	2 (6)	1 (5)	5 (6)
Syphilis &/or LGV &/or GC	2 (6)	0	0	2 (2)

EASL = European Association for the Study of Liver; MSM = men who have sex with men; IDU = injecting drug users; STI = sexually transmitted infections; ALT = alanine transaminase; CT = chlamydia trachomatis; GC = gonorrhoea; LGV = lymphogranuloma venereum; Dx = diagnosis

Results

- Total of 83 acute HCV infections were identified; all men; 81% Caucasian, median age 45 years (IQR 35-48); 82% (68/83) HIV co-infected.
- 4/83 (5%) had negative HCV-cAg but were RNA positive: 3 had ALT >300 IU/l; 1 had an ALT of 33 IU/l (HCV RNA requested in view of high-risk).
- Median ALT at HCV diagnosis 128 IU/l (IQR 67-313); 14 (17%) had ALT <50 IU/l.
- 43/71 (61%) had anti-HCV testing at HCV diagnosis; 20/43 (44%) were anti-HCV positive and the remaining seroconverted a median of 44 days later (IQR 26-66).
- 35% had a concurrent STI (chlamydia, gonorrhoea and/or syphilis) at HCV diagnosis.

If acute HCV diagnosis was dependent on anti-HCV seroconversion and HCV-RNA testing with raised ALT, 37 (45%) of diagnoses would have been delayed or missed

Conclusion

- Screening for acute HCV infection with HCV-cAg test provides an effective tool for early detection of HCV in high-risk populations. HCV-cAg tests are cheaper, with a quicker turnaround time than HCV-RNA tests.
- The cost-effectiveness, sensitivity and specificity of a testing strategy utilising HCV-cAg and ALT for early identification of new HCV infection needs to be formally evaluated in high-risk populations.

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