

Coinfection of *Schistosoma* species with Hepatitis B or Hepatitis C Viruses

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Table 1.3.1 Studies Conducted on Subjects with Chronic Liver Disease or Related Conditions.

No.	Reference	Location (Years)	Study Design (Objective) and Study Population	Diagnosis of Disease	Prevalence	Findings on Coinfection
1	Waked et al. 1995	Liver Institute of Menofiya University, Egypt (1992)	<i>Cross-sectional</i> (prevalence, severity): <u>Subjects:</u> 1023 patients with evidence of CLD, aged 16-75 years, 63% male.	<u>HBV:</u> HBsAg; <u>HCV:</u> anti-HCV; <u>Sch(Sm):</u> rectal snip in patients with history of exposure to infested water; <u>CLD:</u> ultrasound/liver biopsy	<u>Subjects (n=1023):</u> 16% HBsAg+, 74% anti-HCV+, 32% active Sch+; <u>Coinfected:</u> n.a. <u>Note:</u> 4% patients coinfecting with HbsAg+ w/anti-HCV+	Coinfection with HCV, as indicated by anti-HCV+ status, was more common in patients with active Sm (82%) than in patients without eggs (68%) or those with dead eggs (63%) in rectum.
2	Abdel-Kader et al. 1997	Ain Shams University, Cairo, Egypt (n.s.)	<i>Case Series</i> (prevalence, severity): <u>Cases:</u> 50 Minimal hepatic periportal fibrosis patients, n.o.s.; <u>Note:</u> No patient had a history of a fever of unknown origin or exposure to cytotoxic drugs or industrial chemicals.	<u>HBV:</u> HBsAg; <u>HCV:</u> anti-HCV; <u>Sch(Sm/Sh):</u> stool/rectal snip/SchAb; <u>MHF:</u> ultrasound; liver biopsy on some; <u>Note:</u> Sch+ based on positive result to one or more tests.	<u>Cases (n=50):</u> 10% HBsAg+, 26% anti-HCV+, 66% Sch; <u>Coinfected:</u> 10% HBsAg+ w/Sch+, 10% anti-HCV+w/Sch+; <u>Note:</u> 4% of subjects were coinfecting with HbsAg+ w/anti-HCV; Data on coinfection between Sch and HBV not reported.	A greater proportion of patients with minimal hepatic periportal fibrosis were infected with Sch alone than were coinfecting with HBsAg+ or anti-HCV+.
3	Angelico et al. 1997	Medical Research Institute, Alexandria University (1993-1995)	<i>Cross-sectional</i> (prevalence, severity, risk factors): <u>Subjects:</u> 141 consecutive patients with overt or suspected CLD, mean age 43 years, 70% male; 60% rural; All patients had persistent elevated ALT w/	<u>HBV:</u> HBsAg, HBcAb, <u>HCV:</u> anti-HCV, HCV-RNA, <u>Sch(Sm):</u> stool w/SchAb; <u>SHF/LD/LC:</u> ultrasound, liver biopsy; <u>Note:</u> HDVAb present in 3% of patients	<u>Subjects (n=135):</u> 16% HBsAg+, 67% anti-HCV+, 85% SchAb+; (n=126): 24% active Sm+, <u>Coinfected:</u> 2% w/HBsAg+ w/active Sm+, 10% anti-HCV+ w/active Sm+, 63% anti-HCV+ w/SchAb+; <u>Note:</u> 7% of patients were coinfecting with HBsAg+ w/ anti-HCV+	Most patients had evidence of past or ongoing coinfections; Patient coinfecting with active Sm+ and HBsAg+ displayed portal fibrosis and chronic hepatitis, while those with active Sm+ and anti-HCV+ displayed greater cirrhosis and hepatic malignancies; Detection of HCV-RNA was

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			evidence of splenomegaly.			associated with a more severe liver disease and occurred less frequently in patients with a history of Sch; triple infection of HBsAg+ w/anti-HCV+ w/SchAb+ as well as HBsAg+ w/anti-HDV+ w/SchAb+ noted in 33% and 3% of coinfecting patients; PAT associated in general with anti-HCV+.
4	El-Zayadi et al 1997	Cairo Liver Center and Mansoura University, Egypt (n.s.)	<i>Cross-sectional (prevalence):</i> <u>Subjects:</u> 928 CLD patients, mean age 48 years, 66% male; <u>Controls:</u> 500 blood donors, mean age 39 years, 80% male used in some analyses.	<u>HCV:</u> anti-HCV; <u>Sch:</u> SchAb	<u>Subjects (n=928):</u> 54% anti-HCV+, 66% SchAb+, <u>Coinfected:</u> 41% anti-HCV+ w/SchAb+; <u>Controls (n=500):</u> 14% anti-HCV+, 64% SchAb+, <u>Coinfected:</u> 10% anti-HCV+ w/SchAb+	Anti-HCV+ occurred more often among SchAb+ subjects than among those who were SchAb-: Blood Donors (16% vs 9%), and CLD patients (62% vs. 39%); Patients with CLD had a much higher frequency of coinfection with anti-HCV+ than Blood Donor controls (41% vs 10%); There was no cross reactivity between the two antibodies in the testing conducted on these populations.
5	Halim et al. 1999	Al-Azhar University, Egypt (n.s.)	<i>Case Control (risk factors, severity):</i> <u>Cases:</u> 50 patients admitted to hospital with CLD, aged 23-72 years, 60 % males; <u>Controls:</u> 51 patients	<u>HBV:</u> HBsAg; <u>HCV:</u> HCV RNA; <u>Sch:</u> SchAb; <u>CLD:</u> ultrasound/ liver biopsy/CT scan	<u>Cases (n=50):</u> 12% HBsAg+, 74% HCV-RNA+, 84% SchAb+, <u>Coinfected:</u> 10% HBsAg+ w/SchAb+, 60% HCV-RNA+ w/SchAb+; <u>Other chronic disease controls (n=51):</u>	Coinfection, based on either HBsAg+ w/SchAb+ or Anti-HCV+ w/SchAb+ occurred more often in patients with CLD than among either control group; Coinfection with 2 or more of these

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			with other chronic diseases and 50 apparently healthy subjects mainly selected from workers and staff of hospital, matched by age and sex		2% HBsAg+, 43% HCV-RNA+, 15% SchAb+, <i>Coinfected: 2% HBsAg+ w/SchAb+, 22% HCV-RNA+ w/SchAb+; Apparently healthy controls (n=50): 22% SchAb+, 0% HBsAg, 6% HCV-RNA+, 22%SchAb+, Coinfected: 0% HBsAg+ w/SchAb+, 2% HCV-RNA+ w/SchAb+; Note: also tested for HGV</i>	diseases may potentiate pathogenesis of liver disease; Coinfection with HGV and SchAb+ also fairly common (20%).
6	Gad et al. 2001	Suez Canal University and Suez Canal Authority hospitals, Egypt (1998)	<i>Cross-sectional</i> (prevalence, severity, risk factors): <u>Subjects:</u> 240 consecutive patients with suspected CLD, mean age 45 years, 78% male; <u>Controls:</u> 50 volunteer blood donors were used in some analyses.	<u>HBV:</u> HBsAg, HBsAb, HBcAb, HBeAb; <u>HCV:</u> anti-HVC, HCV RNA; <u>Chronic HCV:</u> elevated ALT >=6mo w/anti-HCV+; <u>Sch(Sm/Sh):</u> urine, stool; <u>SLD:</u> ultrasound w/past history of Sch or stool+/urine+	<u>Subjects (n=240):</u> 8% Chronic HBV, 75% Chronic HCV, 37% SLD, <i>Coinfected: 25% Chronic HCV w/SLD; Controls: n.a.</i>	Anti-HCV+ status was far more common among patients with SLD (75%) than among volunteer blood donors (20%); Patients with SLD who were coinfectd with chronic HCV, had more severe liver disease with greater portal hypertension, and complications from liver cirrhosis with considerably higher mean ALT levels; History of blood transfusion and PAT much more common among coinfectd.
7	Hassan et al. 2002	Ain Shams University Hospitals, Egypt (1998-1999)	<i>Case Control</i> (risk factors, complications, severity): <u>Cases:</u> 46 patients with liver cirrhosis,	<u>HCV:</u> anti-HCV, HCV-RNA; <u>Sch:</u> SchAb; <u>Cirrhosis:</u> ultrasound, liver biopsy	<u>Cases (n=46):</u> 24% anti-HCV+ & HCV-RNA+, 67% SchAb+, <i>Coinfected: 22% anti-HCV+ & HCV-RNA-w/SchAb+; Controls:</i> 0% anti-HCV+; No other data	Nitric Oxide (NO) levels increased proportionately with severity of liver cirrhosis, as assessed by Child's classification; Coinfection with anti-HCV+

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			mean age 47 years, 72% male; <u>Controls</u> : 30 healthy subjects, matched by age and sex		reported.	enhanced NO levels in SchAb+ patients compared to SchAb- patients; There was a positive correlation between HCV-RNA and SchAb titre; Sch is an important risk factor involved in the enhancement of NO levels and virus replication, which may aggravate liver cell injury and the development of cirrhosis.
8	Strickland et al. 2002	National Liver Institute, Egypt (n.s.)	<p><i>Case Control</i> (risk factors) : <u>Cases</u>: 237 patients from Sm endemic area of Nile Delta with possible CLD, mean age 31 years, 55.% male; <u>Controls</u>: 212 subjects without liver disease matched by age and sex and neighborhood</p>	<p><u>HBV</u>: HBsAg; <u>HCV</u>: anti-HCV, HVC RNA; <u>Sch(Sm)</u>: stool; <u>History of Sch</u>: questionnaire; <u>CLD</u>: ultrasound</p>	<p><u>Cases (n=237)</u>: 6% HBsAg+, 58% anti-HCV+, 43% HCV-RNA+, 68% History of Sch+, 8% Current Sm+, <i>Coinfected</i>: 46% anti-HCV+ w/History of sch+, 4% anti-HCV+ w/Sm+; <u>Controls (n=212)</u>: 3% HBsAg+, 47% anti-HCV+ , 36% HCV-RNA+, 55% History of Sch+, 11% Current Sm+, <i>Coinfected</i>: 29% anti-HCV+ w/History of Sch+, 6% anti-HCV+ w/Sm+; <u>Note</u>: 5% patients and 4% controls were HBsAg+ w/anti-HCV+; Data on coinfection between Sch and HBV not reported.</p>	<p>There was a greater proportion of HBsAg+ patients than controls that reported a prior history of Sch; However, no difference was found in the proportions who were anti-HCV+ w/current Sm infection; Reported history of prior PAT was associated with anti-HVC+ status, and occurred more often in CLD patients (66%) vs. controls (50%).</p>

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