Table 2.3. Case–control studies of HCV genotype and hepatocellular carcinoma

Reference, study location and period	Characteristics of cases	Characteristics of controls	Detection method	Exposure categories	No. of exposed cases	Relative risk [odds ratio] (95% CI)	Adjusted potential confounders	Comments
Tanaka *et al.* (1996) Japan, 1985–1989	HCC cases admitted to Kyushu University Hospital [described in Table 2.4] – 56 HCV RNA-positive cases with HCV genotype data	Residents of Fukuoka City who underwent health examinations at public health centre near Kyushu University Hospital [described in Table 2.4] – 24 HCV RNA-positive controls with HCV genotype data	HCV RNA: nested RT-PCR, confirmed by Amplicor RT-PCR assay HCV genotype: RT-PCR with type-specific primers (Okamoto et al. 1992)	Genotype 2a 1b 2a + 2b	 6 49 1	 1.0 3.8 (1.0–13.9) Undefined	Age and sex	
Tanaka *et al.* (1998a) Japan, 1990–1994	182 anti-HCV- and HCV RNA-positive patients with HCC and cirrhosis (M/F ratio: 2.20), diagnosed at the Department of Internal Medicine of Osaka Medical Centre for Cancer and Cardiovascular Diseases between 1990 and 1994, all negative for HBsAg; mean age: 63.3 (±5.6) years; participation rate NR; histological confirmation rate NR; 179 infected with single type of HCV included in analysis	145 anti-HCV- and HCV RNA-positive control subjects (M/F ratio: 1.42) recruited between 1992 and 1994: 114 blood donors from Osaka Red Cross Blood Center and 31 outpatients from Osaka Medical Centre for Cancer and Cardiovascular Diseases, all with ALT levels lower than 1.5 times upper limit of normal, no clinical symptoms of chronic liver disease, and negative for HBsAg; mean age: 47.8 (±11.1) years; participation rate NR; 143 infected with single type of HCV included in analysis	HCV genotype: RT-PCR with 5 type-specific primers (Okamoto et al. 1992, 1993)	Genotype 2a, 2b 1b	 26 153	 1.0 2.3 (1.0–5.1)	Age and sex	

Table 2.3. Case–control studies of HCV genotype and hepatocellular carcinoma

Reference, study location and period	Characteristics of cases	Characteristics of controls	Detection method	Exposure categories	No. of exposed cases	Relative risk [odds ratio] (95% CI)	Adjusted potential confounders	Comments
Tagger *et al.* (1999) Italy, 1995–1998	305 incident cases of HCC admitted to 2 main hospitals in province of Brescia (Brescia HCC Study) [described in Table 2.4]; 122 HCV RNA-positive cases underwent HCV genotyping	610 patients without liver disease or malignant neoplasms admitted to same hospitals as cases [described in Table 2.4]; 30 HCV RNA-positive controls underwent HCV genotyping	Anti-HCV: third-generation enzyme-linked immunoassay with confirmation by third-generation recombinant immunoblot assay HCV RNA (if anti-HCV+): RT-PCR HCV genotype: PCR with type-specific primers for types 1a, 1b, 2, and 3	HCV status Anti-HCV– Genotype 1a Genotype 1b Genotype 2	 176 3 83 36	 1.0 Undefined 34.2 (18.0–64.7) 14.4 (7.2–28.7)	Age, sex, residence, HBV status, and alcohol intake	In initial analysis of 62 RNA-positive cases and 16 RNA-positive controls (Donato *et al.*, 1997): OR, for 1b vs 2=2.9 (0.9–10)
Franceschi *et al* (2006a) Italy, 1999–2002	229 cases of incident HCC admitted to 2 national cancer institutes, 1 hospital in province of Pordenone, and 4 hospitals in Naples [described in Table 2.4]; 144 HCV RNA-positive cases underwent HCV genotyping	431 hospital-based controls admitted to same hospitals as cases, for acute conditions [described in Table 2.4]; 30 HCV RNA-positive controls underwent HCV genotyping	Anti-HCV: third-generation microparticle EIA, with confirmation by Inno-LIA HCV RNA: second-generation Amplicor RT-PCR assay HCV genotype: second-generation line probe assay	HCV status Anti-HCV–/ HCV RNA– Genotype 1 Genotype 2 Genotype 5 Unknown	 80 101 41 1 1	 1.0 27.1 (14.9–49.0) 27.4 (11.6–64.5) --- --- 	Age, sex, centre, and education	

Table 2.3. Case–control studies of HCV genotype and hepatocellular carcinoma

Reference, study location and period	Characteristics of cases	Characteristics of controls	Detection method	Exposure categories	No. of exposed cases	Relative risk [odds ratio] (95% CI)	Adjusted potential confounders	Comments
Suruki *et al.* (2006) Japan, 1996–2004	39 (of 70) cases of HCC with a blood sample obtained 1 year prior to HCC diagnosis and evidence of chronic HCV infection (HCV RNA or HCV core antigen) (25 men, 14 women; mean age: 65.3 (±7.5) years), identified from community-based cohort study of anti-HCV seropositive residents of Town C (Town C HCV Study); confirmed by physician report (n=32) or identified by death certificate (n=7)	117 cohort subjects with evidence of chronic HCV infection; 3 controls matched to each case by sex, age at first available sample (±1 year), and length of follow-up (equal or greater than case)	HCV RNA: Amplicore RT-PCR assay HCV core antigen: commercial fluorescent enzyme immunoassay from 1995 to 2001 or IRMA beginning in 2002 HCV genotype: serological determination by commercial EIA and by RT-PCR (Ohno et al., 1997) when serological group could not be determined	Genotype Group 2 (2a,2b) Group 1 (1a,1b)	 9 29	 1.0 [1.6 (0.69–3.7)]		