GB/Hepatitis G Viruses

Disease Agent:

- GB viruses (GBV-C/HGV is an acronym for GB virus-C and hepatitis G virus strain variants.)

Disease Agent Characteristics:

- Family: *Flaviviridae*; Genus: Unclassified for GBV-C
- Virion morphology and size: Enveloped, nucleocapsid of unknown symmetry, 50-100 nm in diameter
- Nucleic acid: Linear, positive-sense, single-stranded RNA, ~9.4 kb in length
- Physicochemical properties: Less stable in CsCl than HCV; other properties not established for these viruses, but, under in vitro conditions, other flaviviruses are stable in alkaline environment of pH 8 and are sensitive to treatment with heat, organic solvents, and detergents.

Disease Name:

- No known disease association

Priority Level:

- Scientific/Epidemiologic evidence regarding blood safety: Absent; transmission documented, but no disease associated despite extensive studies
- Public perception and/or regulatory concern regarding blood safety: Absent
- Public concern regarding disease agent: Absent

Background:

- In the 1960s, serum from a surgeon (GB) with acute hepatitis appeared to transmit hepatitis to marmosets. In 1995, scientists identified two strains of GB virus, GBV-A and GBV-B, using representational difference analysis. These proved to be marmoset agents. Using degenerate primers based on HCV, these same investigators subsequently discovered GBV-C, a human agent that was initially presumed to cause hepatitis.
- Samples from chimpanzees and humans with transfusion-transmitted non-A, non-B hepatitis were cloned and yielded the entire genome of GBV-C.
- Despite their source from hepatitis cases, subsequent studies showed that neither GBV-C nor HGV was a cause of human hepatitis.
- Sequence analysis showed that GBV-C and HGV were variants of the same agent in the family *Flaviviridae* and were closely related to HCV.

Common Human Exposure Routes:

- Primarily blood-borne, although other modes of transmission may be possible

Likelihood of Secondary Transmission:

- Probably frequent, based on the prevalence of virus in blood donors.

At-Risk Populations:

- Blood recipients, injection-drug users, and infants born to infected mothers

Vector and Reservoir Involved:

- Humans

Blood Phase:

- Viremic phase can last from weeks to years

Survival/Persistence in Blood Products:

- Survives refrigeration
- Inactivated by solvent-detergent

Transmission by Blood Transfusion:

- Well documented in prospective studies

Cases/Frequency in Population:

- The prevalence of viremia is 1-4%, and antibody prevalence is 3-14% in blood donors.
- Prevalence of 10-20% in patients with viral and non-viral liver diseases based on antibody and RNA
- Prevalence of 75-90% in injection-drug users (antibody and RNA)

Incubation Period:

- Viremia becomes detectable from 2 days to 2 weeks postexposure.
- A clinical incubation period is not relevant as there is no clinical disease.

Likelihood of Clinical Disease:

- No clinical illness has been identified.

Primary Disease Symptoms:

- No virus-specific symptoms identified

Severity of Clinical Disease:

- No clinical disease established
- Some investigators suggest that HGV may have a favorable impact on the natural history of HIV infection.

Mortality:

- None

Chronic Carriage:

- The vast majority of subjects clear infection within 1-2 years.

- A minority of infections results in an asymptomatic chronic carrier state.

Treatment Available/Efficacious:

- No indication for treatment

Agent-Specific Screening Question(s):

- No specific question is in use.
- Not indicated because transfusion-transmitted disease has not been demonstrated
- No sensitive or specific question is feasible.

Laboratory Test(s) Available:

- No FDA-licensed blood donor screening tests exists.
- Antibody tests available but no commercial assay in the US
- Virus detected by NAT but no commercial assay in the US

Currently Recommended Donor Deferral Period:

- No FDA Guidance or AABB Standard exists.
- There is no indication for deferral in the absence of disease association.

Impact on Blood Availability:

- Agent-specific screening question(s): Not applicable
- Laboratory test(s) available: Not applicable

Impact on Blood Safety:

- Agent-specific screening question(s): Not applicable
- Laboratory test(s) available: Not applicable

Leukoreduction Efficacy:

- Unknown, but unlikely to be effective against a noncell-associated virus

Pathogen Reduction Efficacy for Plasma Derivatives:

- Highly susceptible to inactivation

Other Prevention Measures:

- None required

Suggested Reading:

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