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23. | HUMAN PEGIVIRUS 1 AND 2 (HPgV-1, HPgV-2)

This fact sheet has been removed from archive and made available based on new data regarding disease associations.

23.1 | Disease agent

- Human pegivirus 1 (HPgV-1; formerly known as GBV-C or hepatitis G virus) and HPgV-2.
- There are currently 11 recognized species, A-K, in the genus *Pegivirus* genus.

23.2 | Disease agent characteristics

- Family: *Flaviviridae*; Genus: *Pegivirus*.
- Virion morphology and size: Enveloped, 50–100 nm in diameter; genome does not appear to encode a nucleocapsid protein analogous to HCV although the virus appears to contain a nucleocapsid.
- Nucleic acid: Linear, positive-sense, single-stranded RNA, ~9.4–9.8 kb in length. Sequence diversity over time is 10–25 times greater for HPgV-1 than for HPgV-2.
- Physicochemical properties: Less stable in CsCl than HCV; other properties not established for this virus, 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.

23.3 | Disease name

- No confirmed disease associations but a 2–3 fold risk of lymphomas of diverse types was associated with HPgV infection (species unspecified) in a meta-analysis and the authors called for more detailed studies, in particular to rule out reverse causality, the role of other pathogens and to explore biological mechanisms.
- Subsequent small case series suggest associations with a clinically distinct form of encephalomyelitis (with prominent spinal cord and optic manifestations) and with Parkinson's disease.

23.4 | Priority level

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

23.5 | Background

- In the 1960s, serum from a surgeon (GB) with acute hepatitis appeared to transmit hepatitis to tamarins. 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. GBV-A and GBV-B are pathogens in these nonhuman primates.
- Samples from chimpanzees and humans with transfusion-transmitted non-A -C hepatitis were cloned and yielded the entire genome of GBV-C.
- *Pegivirus* is the name derived from “Persistent GP viruses.” GBV-C is now known as “human pegivirus” (HPgV-1).
- Despite its initial isolation from non-A-C hepatitis cases, subsequent studies have not established a causal link between HPgV-1 and hepatitis or any human disease.
- HPgV-1 is transmissible by transfusion. Antibody prevalence is increased in multi-transfused patient populations and in other individuals with a history of blood exposure, such as IVDU.
- HPgV-1 infection has been shown to delay progression to AIDS during coinfection.

23.6 | Common human exposure routes

- HPgV-1 and HPgV-2 are primarily blood-borne, although other modes of transmission include sexual and mother-to-child transmission.

23.7 | Likelihood of secondary transmission

- Probably frequent, based on the prevalence

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of virus in blood donors.

23.8 | At-risk populations

- Blood recipients, injection-drug users, and infants born to infected mothers may be infected with HPgV-1.
- HPgV-2 rarely infects healthy people and is most commonly found in HIV/HCV-infected patients (<2%) but does not contribute to liver injury.

23.9 | Vector and reservoir involved

- Humans and nonhuman primates

23.10 | Blood phase

- Viremic phase can last from weeks to years.

23.11 | Survival/persistence in blood products

- Survives refrigeration.
- Inactivated by solvent-detergent treatment.

23.12 | Transmission by blood transfusion

- Well documented in prospective studies

23.13 | 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 nonviral liver diseases based on antibody
- Prevalence of 75%–90% antibody and RNA).

23.14 | 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.

23.15 | Likelihood of clinical disease

• Unknown absent clear confirmation of disease associations

23.16 | Primary disease symptoms

- No virus-specific symptoms have been identified.

23.17 | Severity of clinical disease

- No clinical disease has been clearly established for either HPgV-1 or 2. Both viruses are lymphotropic, but not hepatotropic and can cause infection in both T and B lymphocytes. HGV may have a favorable impact on the natural history of HIV infection.

23.18 | Mortality

- None

23.19 | Chronic carriage

- The vast majority of subjects clear infection within 1–2 years.
- A minority of infections result in an asymptomatic chronic carrier state.

23.20 | Treatment available/efficacious

- No indication for treatment. Treatment for HCV can eliminate HCV RNA but does not appear to alter HPgV-2 RNA levels in the setting of co-infection.

23.21 | Agent-specific screening question(s)

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

23.22 | Laboratory test(s) available

- No FDA-licensed blood donor screening tests exist.

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- Antibody tests available but no commercial assay in the United States.
- Virus detected by RT-PCR, but no commercial assay in the United States.

23.23 | Currently recommended donor deferral period

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

23.24 | Impact on blood availability

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

23.25 | Impact on blood safety

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

23.26 | Leukoreduction efficacy

- Unknown, although reported to be lymphotropic, unlikely to be effective against cell-free virus, which is present in high titers in plasma.

23.27 | Pathogen reduction efficacy for plasma derivatives

- Highly susceptible to inactivation

23.28 | Other prevention measures

- None required

SUGGESTED READING

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