

Letter to the Editor

Should Hepatitis C Antibody Positive Patients be Isolated in High Prevalence Hemodialysis Units to Prevent Nosocomial Transmission?

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Dear Sir,

Hepatitis C virus (HCV) infection is prevalent worldwide, and has become a major cause of morbidity and mortality in patients on long-term hemodialysis (HD), especially in the Middle East and Far Eastern countries^[1-4]. The burden of HCV disease is on the rise for these immunocompromised patients. Of particular concern is the risk of chronic liver disease that, complicates renal transplantation, increases cost of end stage renal disease (ESRD) management, may lead to death^[1,5].

Although a number of risk-factors such as blood transfusions and dialytic age (time-span since the initiation of the HD treatment) have been recognized, nosocomial transmission has been reported to be the key mode of HCV infection in the modern hospital-based HD settings^[6]. The compelling requirement for vascular access site and the extracorporeal circulation while performing HD adds to the risk of parenteral exposure of ESRD patients to prevailing HCV infection within the unit. Cross infections from infected patients through blood contaminated gloves and hands of staff, dialysis equipment, dialyzer and blood lines surfaces, may occur in a high-risk HD environment^[3,9]. The physical proximity to infected patients in the units of high HCV prevalence may conceivably place the environmental safety further at risk and facilitate the dissemination of the virus during HD.

Although repetitively transfused HD patients have been reported to be at a greater risk of contracting HCV infection, the prevalence of anti-HCV antibody positivity in HD cohort is persistently higher than the blood donors and the general population, worldwide^[3,6-8,10]. Blood transfusions are no longer considered a major risk factor as with routine HCV screening through highly sensitive tests (ELISA-HCV) for blood

donors, the risk of post-transfusion HCV infection (< 1/100,000 blood units) is virtually negligible^[11].

A significant association between the dialytic age and anti-HCV positivity has been reported in several studies^[12,13]. Dialytic age has been considered as a powerful predictor of the risk of acquisition of HCV infection. The longer dialytic age facilitates nosocomial transmission of HCV mainly by increasing the span of exposure of patients to the high-risk HD environment. The chances of acquiring HCV infection are greatly enhanced after a decade of HD with the reported predictable risk of 10% per year^[14].

Molecular virological studies have clearly implicated nosocomial transmission of HCV within the high-risk HD settings^[15,16]. Patient-to-patient transmission has been reported to occur through blood contaminated machines, gloves and hands of nursing staff, shared dialysis equipment and dialyzer reuse, as the disruption of the membrane integrity while reprocessing the dialyzers could possibly permit the passage of virus into the blood compartment^[3,9,15-17]. In addition, the outbreaks of HCV transmission have been reported in HD units, due to failures to strictly adhere to the universal precautions, for example, failure to change gloves between the patients while performing HD treatments, especially during emergency situations^[18]. However, annual seroconversion rates of > 5% per year, reported in high prevalence HD units (> 20% prevalence rates), continue to be a cause for concern^[7].

Patients undergoing long-term HD, require substantial nursing care during each session that lasts for nearly four hours. Nurse staffing varies widely among HD units and within the unit. The staffing patterns used in the HD units with high HCV seroprevalence, may be an additional risk

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factor for the acquisition of HCV infection. Recent data from an investigation by Centers for Disease Control (CDC), Atlanta, suggest that understaffing may be a risk factor for nosocomial infections and could be considered a surrogate marker of poor quality health care^[19]. Lone multicenter prospective study from Italy concluded that the combination of understaffing and a high level of infected patients in the dialysis setting increased the risk of nosocomial transmission of HCV^[20]. The presence of HCV-RNA in the hand washings from nurses dialyzing HCV positive, as well as HCV negative patients, has been demonstrated in a recent clinicovirological study from the Middle East^[21].

Unresolved debate continues on whether HCV positive patients should be strictly isolated in the manner identical to hepatitis B positive patients through provision of dedicated space, nursing staff and dialysis equipments, as per the recommendations of CDC, in order to contain the disturbingly elevated annual seroconversions rates in HD units of high HCV prevalence.

Points of view in support of such an approach are:

1. HCV is parenterally transmitted and HD patients are at high risk of nosocomial infection.
2. There is high prevalence of HCV infection and mortality among patients in hospital-based HD settings, due to the risk of chronic liver disease and complications in renal transplantation together with the enormously increased cost of ESRD management.
3. Worldwide use of vaccine and the strict isolation of HBV positive patients have considerably reduced the dissemination of the virus in HD units.
4. There is no vaccine in sight against HCV because of its genetic heterogeneity. Prevention through isolation ought to acquire precedence. Yet, CDC currently does not advocate the identical stringent isolation policy for the anti-HCV positive patient.

The strong opinions against the isolation strategy are that:

1. HCV circulates at low titers in blood and is quickly degraded at room temperature; it is not as infective as HBV.
2. Isolation of anti-HCV positive patients does not completely eliminate the risk of transmission because, presently approved anti-HCV tests do not make a distinction between current and past infection and a negative test does not rule out HCV infection.
3. Even though strict isolation may shield uninfected hemodialysis patients from HCV

infection, it might as well increase the risk of superinfection by other strains of HCV among those already infected with the single HCV strain.

Strict adherence to universal infection control precautions, careful attention to personal and environmental hygiene and proper sterilization of dialysis equipment have been shown to reduce yearly seroconversions in a recent Belgian multicenter study^[22]. Nonetheless, long-term effective control of HCV dissemination would be realized through expedited efforts to develop a vaccine and through awareness programs for the community and among health care providers.

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