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## HIV and dialysis: unfounded optimism or real change

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*Nefrología* 2008; 28 (5) 479-482

HIV disease is a health catastrophe.<sup>1</sup> There are approximately 34 million people affected, with 2.5 million new infections and 2.1 million deaths every year.<sup>2</sup> In countries with access to treatment, introduction of highly active antiretroviral therapy (HAART) has greatly improved survival.<sup>3</sup> This treatment appears to have a long-term influence to decrease kidney disease, but for the time being, improved survival has resulted in an increase in the number of HIV-infected patients with ESRD who require dialysis.<sup>4</sup>

In Spain, HIV patients account for 1.1% of all patients on dialysis. Sixty percent of these have HCV coinfection and 7% HBV coinfection, 86% are receiving HAART, the predominant procedure is hemodialysis, and 20% could meet transplant requirements.<sup>5,6</sup> Quality of dialysis and safety measures against HIV and other viral infections have recently been addressed in a consensus document.<sup>7</sup>

Survival on dialysis has improved after the HAART era. However, some authors have noted that this improvement is smaller than would be expected

if data from the population with no renal failure were extrapolated.<sup>8</sup> Ahuja<sup>9</sup> assessed 6166 HIV-positive patients dialyzed in the United States from 1990 to 1999 and found an improvement in one-year survival from 56% to 74%. Macrea<sup>10</sup> found that survival doubled in the Afro-American population. However, an ongoing study in Afro-Americans in Baltimore<sup>11</sup> found no change.

Survival analysis in dialyzed HIV patients is complex. Recognized risk factors include age, Afro-American ascent, CD4 count, disease stage, HCV coinfection, albumin levels, HAART treatment,<sup>8-15</sup> and persistent drug addiction.<sup>16</sup> While biopsied patients are unfortunately few, the type of renal lesion also has an influence on ESRD occurrence and patient survival, with the HIVAN type having the worst prognosis.<sup>17</sup>

Adequate nutrition with albumin normalization maintains immune function and decreases complications, disease progression, and mortality.<sup>18</sup> Two meta-analyses recently reviewed the potential role of supplementation with macro and micronutrients, but reported no conclusive results.<sup>19,20</sup> Assessment of weight and BMI changes is considered important in HIV, and decreases are associated to a poorer prognosis.<sup>21</sup> In patients on dialysis, weight changes are particularly complex to analyze, and

evaluation with nPCR and impedance would be required.<sup>22,23</sup>

Adequate, up-to-date antiretroviral treatment is possibly the greatest determinant of survival.<sup>3,4,24</sup> Continuous advent of new drugs and characteristics of the population on dialysis make this treatment difficult, but a recent review on the subject is available.<sup>25</sup>

The high number of dialyzed HIV patients without HAART treatment has recently been stressed.<sup>11,26</sup> Patients theoretically receiving HAART but with a dosage poorly adapted to dialysis, usually with very low doses, represent another problem.<sup>27</sup>

As regards the type of procedure, hemodialysis (HD) has predominately been used, but comparisons to peritoneal dialysis (PD)<sup>28,12</sup> appear to show similar results. In a study on 6053 HIV patients dialyzed in the United States from 1995 to 1999 (88% on HD and 12% on PD), the same survival was found.<sup>28</sup> A more recent study in which two small groups of HIV patients were followed up reported survival rates of 100%, 83%, and 50% at 1, 2, and 3 years respectively in PD patients; the respective values in HD patients were 75%, 33%, and 33%, and adjusted differences were not significant.<sup>12</sup> Both procedures therefore provide good results, and selection of one of them should therefore be made based on patient characteristics and preferences.

The greatest diversity in published data is found in complications in HIV patients on dialysis as compared to HIV-negative patients. Most old and many recent studies report a greater incidence of catheter infections, peritonitis, severe infections, and hospitalizations and a lower survival in HIV-positive as compared to HIV-negative patients.<sup>8-10,14</sup> However, some recent reports contradict these data. The French

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experience<sup>13</sup> reported the same survival in hemodialysis for HIV patients than for the general population (89% at 2 years). In this issue, Rivera et al<sup>29</sup> report their experience in treatment of HIV patients using peritoneal dialysis. Their results were particularly good, with no differences in hospitalization or number of peritonitis episodes as compared to negative patients and 1, 2, and 3-year survival rates of 100%, 62%, and 50%, similar to the rates reported in another recent population.<sup>12</sup>

In HD, the ideal access would be a native arteriovenous fistula. No differences in infections have been seen in this subgroup as compared to HIV-negative patients with AVF.<sup>30</sup> An analysis of bacteremia in patients with implanted catheters found a greater incidence in HIV patients of infections caused by Gram-positive organisms and multiple germs requiring hospital admission, but no differences in Gram-negative infections.<sup>31</sup>

A final aspect is the increase in the causes of death not directly related to HIV, such as liver disease related to coinfection by HCV, or cardiovascular disease in which antiretroviral medication has been implicated<sup>32-35</sup> and that raises new preventive priorities.<sup>36-37</sup>

The outlook allows for being optimistic because favorable changes have occurred in dialysis results in HIV. There are, however, widely different mortality results, possibly as an expression of subpopulations with different risk factors. Prospective studies with a comparative cohort are lacking. In this regard, we hope that the collaboration started between the SEN and GESIDA for a prospective study with a comparative cohort in Spain will clarify some issues.

Treatment of HIV patients with renal insufficiency is a challenge that nephrologists must address looking for multidisciplinary support to achieve an adequate HAART, a good nutri-

tion, and a special attention to HCV-induced liver disease, without forgetting the emerging cardiovascular morbidity.

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## KEY CONCEPTS

**1.** HIV patients with ESRD requiring dialysis are increasing, and survival has improved as a result of new treatments.

**2.** Risk factors include age, Afro-American ascent, CD4 count, HCV coinfection, albumin levels, and adequate treatment (HAART).

**3.** Hemodialysis and peritoneal dialysis provide the same results, and should be selected base on patient characteristics and preferences.

**4.** When comparing HIV-positive and negative patients on dialysis, most studies report a poorer survival and a higher infection rate, but some recent publications have reported similar results. There is no prospective cohort study.

**5.** Causes of death nor directly related to HIV are increasing, particularly chronic liver disease induced by HCV and cardiovascular causes, in which some antiretroviral drugs may be having an influence.

**6.** Multidisciplinary collaboration primarily focused on optimization of HAART treatment and improvement of nutritional status may improve current results.

**7.** In this issue, Rivera et al<sup>(29)</sup> report very positive results from their experience with PD in HIV patients, and found no differences in the incidence of peritonitis or the need for hospitalization as compared to HIV-negative patients.

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