Karnofsky Performance Status and Assessment of Global Health Status

Murri, Rita; Scoppettuolo, Giancarlo; Damiano, Fernando; Ammassari, Adriana; Fantoni, Massimo; Antinori, Andrea

To the Editor: The article by O'Dell et al. [1] that appeared in a recent issue of this journal highlights the validity of the Karnofsky Performance Status (KPS) in reflecting global health status in HIV-infected people. Even though this can be true for AIDS patients, we think that KPS might be an inadequate measure in less advanced patients such as those with HIV infection and without an AIDS-indicator disease. To verify this hypothesis, we studied KPS in a sample of patients with HIV infection belonging to CDC groups A and B [2].

A cross-sectional study was performed at the Catholic University of Rome to assess the correlation between KPS, demographic and clinical characteristics, and health-related quality of life (HRQoL) scores. From December 1994 to March 1995, consecutive HIV outpatients were recruited only once to complete a MOS-HIV-30 quality-of-life questionnaire [3]; patients with an AIDS-indicator disease were excluded. KPS was assigned by a physician and eventually transformed into three ranks (KPS = 100, KPS = 90, and KPS ≤ 80) or analyzed as a continuous measure by linear regression. The HRQoL questionnaire was completed by the patient, who indicated the presence and the frequency in the past 2 weeks of a list of 25 symptoms to obtain a total symptom score for each patient. Of 240 patients, 213 (88.7%) consented to participate: 71 (33%) were women, 120 (56%) had acquired the HIV infection through a sexual route; mean age was 36 years [95% confidence interval (CI) 34.8-36.9], and mean CD4 cell count was 324/μl (95% CI 291-358). A total of 183 patients (85.9%) had a KPS score of 100, 22 patients (10.4%) had a score of 90, and eight patients had a score of ≤80. The mean of KPS scores was 98 (95% CI 98-99) without significant differences at the Student t test for gender (p = 0.47) or transmission category (intravenous drug use versus sexual route, p = 0.32). No significant correlation was found between KPS and age (r² = 0.01, p at Pearson = 0.12).

On the other hand, KPS was correlated with CD4 cell count (p at Pearson <0.001) even if r² = 0.07. We also studied differences among groups regarding social conditions. Educational background was classified in four levels: primary school (5 years), secondary school (8 years), high school (13 years), and university (>17 years). The type of residence was grouped in the high (residential/villa) or the low (popular) level. Income was classified in two groups: >$400 (corresponding to the lowest social pension in Italy) or <$400. No significant differences were observed in KPS scores between groups stratified for social conditions [education level: p at analysis of variance (ANOVA) = 0.14; kind of residence: p at t test = 0.23; and monthly income: p at t test = 0.22].

Stratifying patients according to CD4 cell count, in those (n = 80) with CD4 cells <200/μl (KPS = 100, n = 59; KPS = 90, n = 14; and KPS ≤ 80, n = 7), the one-way ANOVA showed a statistically significant difference among KPS ranks in all the dimensions of HRQoL except for sexual functioning, social...
functioning, mental health, and health transition. On the contrary, in the group of patients with a CD4 cell count of >200/μl (n = 133), only nine patients had a KPS ≤90, and the analysis did not show any difference among KPS ranks in sexual functioning, social functioning, mental health, energy, health distress, cognitive functioning, and health perception. In patients with a CD4 cell count of >200/μl, difference among KPS ranks was strong only in HRQoL domains describing physical status (p at ANOVA = 0.01).

Stepwise multiple linear regression was performed using the physician-assigned KPS score as the dependent variable and the patient-generated health status measures (p at entry <0.01) as well as clinical characteristics as the independent variables. In all patients, the only variables that proved to be independent predictors of KPS were the CD4 cell count and the symptom score; whereas, in patients with a CD4 cell count of >200/μl, only the role-functioning dimension was independently correlated with KPS.

In conclusion, in this sample of HIV patients without an AIDS-indicator disease, we found that KPS was not a reliable measure of HRQoL, but was only correlated with CD4, a marker of the HIV disease stage and, as previously noted, with the number and frequency of symptoms. In their study, O’Dell et al. excluded from the analysis those patients who did not have a KPS assigned by physicians. However, excluded patients could be those with a higher KPS value for whom physicians did not consider it necessary to record performance status. This selection bias could have led to the recruitment of only the lower-score patients and, consequently, to a misinterpretation of the actual validity of KPS in reflecting global health status, particularly in less advanced patients.

As previously observed, KPS is not a measure of HRQoL. Also, in our experience, KPS is not an efficacious tool for the assessment of global health status in HIV patients without AIDS. The philosophy of HRQoL should be to achieve an overall comprehension of patient status, including mental and psychological construct as well as emotional ground. All of these aspects with physical abilities enable anyone to pursue valued life goals, and this is reflected in general well-being. Besides this, since KPS is extensively used in stratifying and monitoring patients in clinical trials, further studies are necessary to clarify the actual validity of this measure in early-stage HIV patients. In our sample, only nine patients of 133 with a CD4 cell count of >200/μl had a KPS ≤90: high and homogeneous values do not stress differences (the so-called ceiling effect) and cannot enable the identification of patients at different HRQoL levels. Finally, even if KPS is widely considered easy to apply and feasible, it remains a physician-rated rather than patient-rated measure and, therefore, liable to a poorer comprehension of global health status.

Rita Murri; Giancarlo Scoppettuolo; Fernando Damiano; Adriana Ammassari; Massimo Fantoni; Andrea Antinori

Department of Infectious Diseases; Catholic University; Rome, Italy

REFERENCES


