

COMMENTARY

Rehabilitation need and referrals in hematopoietic stem cell transplantation: the experience of Quality of Life Working Party of the Rome Transplant Network

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We have read with great interest the article by Laine *et al.*,¹ entitled 'Rehabilitation referrals and outcomes in the early period after hematopoietic cell transplantation'. The authors illustrated the results of their study, aimed to assess patterns of referral to rehabilitation after hematopoietic stem cell transplantation (HSCT) and outcome of rehabilitation. Prompted by this paper, we will attempt to provide some observations concerning four key issues.

FREQUENCY OF REHABILITATION NEED

In the present paper, rehabilitation referral was reported in 26% of patients, thus suggesting that functional impairment and the related need for rehabilitation were not inferior to one-quarter of patients undergoing HSCT. In our experience, the frequency of motor-function impairment among HSCT recipients is even higher; indeed, in a series of 25 consecutive HSCTs performed in our center (20 autologous and 5 allogeneic, standard conditioning regimen in all cases, median age at HSCT 42 years (18–70)), 10 patients (40%) complained about motor-function impairment, with or without basic ADL (activities of daily living) impairment;² in a multicenter analysis in our transplant centers network in Rome examining a series of 230 consecutive HSCTs (117 autologous and 113 allogeneic, median age 36.1 years (0.09–68.8)), basic ADL impairment, defined as Barthel Index (BI) < 100, was reported in 137 HSCTs (59%); disability was mild (BI=67–99%), moderate (BI=33–66%) and severe (BI=0–32%) in 34 (15%), 63 (27%) and 40 (17%), respectively. Severe disability was observed more frequently in allogeneic HSCT recipients (26/113 (23%) allogeneic vs 14/117 (12%) autologous HSCT patients ($P=0.0025$)).³

RISK FACTORS FOR REHABILITATION NEED

In the present paper,¹ certain variables (older age, low performance status and pre-transplant hypertension) were significantly related to the need for referral to rehabilitation, thus suggesting the possibility of identifying groups of patients who could be suitable targets for preventive measures (in order to reduce the incidence of disability and the need for rehabilitation). Our experience supports the hypothesis that early reduction of motor

function could be a risk factor for basic ADL-impairment development; indeed, in our series of 51 consecutive HSCT,⁴ a very mild-motor function impairment pre-transplant (defined as Rivermead Motility Index < 15 with BI=100) was related to the development of basic ADL impairment (57.1% vs 12.8% in patients with normal motor function); the pre-transplant correction of this condition (with rehabilitation therapy) could lead to reduction of the risk to develop disability in the early phase of HSCT. Moreover, during transplant, patients at high risk of disability development (low performance status, early-motor-function impairment, allogeneic donor, hypertension such as comorbidities, and older age) could be enrolled in programs of early rehabilitation prophylaxis (for example, intensive exercise programs) in order to preserve motor function, thus reducing ADL impairment, rehabilitation therapy referral and nurses or caregivers workload, as well as improving quality of life.

RELATION BETWEEN COMPLICATIONS AND REHABILITATION

In the present paper,¹ the overall outcome of rehabilitation was an improvement of motor functioning, thus confirming that rehabilitation is effective in the setting of HSCT, as we observed in our daily practice, even in complex situations;⁵ nevertheless, in the results section the authors state that 'there was an observed association between post-transplant complications' and receipt of rehabilitation treatment', and in the conclusion section they cautiously state that it is uncertain 'as to whether the rehabilitation consult was in reaction to these complications or the consult was initiated before the development of complications', thus not excluding the hypothesis that the rehabilitation treatment itself could be the cause of the reported complications. In the previously reported series of 25 consecutive autologous and allogeneic transplantation,² we identified the causes of the 10 cases of disability in the following mechanisms (multiple mechanisms in a single patient were possible): muscular deficit in eight patients (fatigue/muscle wasting in six, CNS damage-related hypotrophy in two); bone/joint damage with movement-related pain in three; respiratory tract infection in two; others central or peripheral nervous system alterations in three; movement-related pain alone in one; visual deficit in one; among these 18 mechanisms in the 10 disabling patients, 14 were due to treatment and 4 were due to causes not related to disease or treatment. The possibility that rehabilitation could induce those

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complications is really remote; indeed, in our experience, disability development was temporally subsequent to the development of the related complication. Nevertheless, it is possible, although rare, that some complications arise as an effect of disability, because disability may directly increase the risk of certain complications (such as accidental falls, pressure ulcers, thrombosis).⁵ It is our firm opinion that part of the complications observed in the series reported by Laine was the cause of disability and rehabilitation need; part of them did not affect motor function.

TIME TO REHABILITATION REFERRAL

The time and conditions at which rehabilitation should be started are not clearly defined, but it is common opinion that the earlier the rehabilitation starts, the faster the patient will improve. Therefore, first, we think that any form and degree of impairment should be considered and evaluated for rehabilitation, after checking for exclusion criteria; second, we suggest using, in daily practice, instruments to measure motor-function impairment (such as BI, RMI, patient-reported outcome/QoL questionnaires, so on.) as a dashboard⁷ to monitor patients in strict collaboration with rehabilitation therapists, in order to promptly start treatment, whenever possible.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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