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Transfusions at home in patients with myelodysplastic syndromes

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ABSTRACT

We report descriptive data of a home care (HC) program, throughout a 5-years period (2006–2010), focusing on the reliability and the safety of transfusions at home in 211 patients affected by myelodysplastic syndromes (MDS). Our results outline the potentially relevant role of a specifically dedicated HC service in the global management of frail MDS patients for which transfusions at home may represent a valuable option to maintain a good quality of life and avoid the possible discomfort due to hospital admissions and outpatient visits.

1. Introduction

Myelodysplastic syndromes (MDS) are a heterogeneous group of bone marrow disorders [1] with a higher incidence in the elderly [1–3]. Chronic anemia is one of the main clinical features of MDS [1,4] and can greatly compromise patients' quality of life (QoL) [5,6]. Although erytropoietic stimulating agents (ESAs) and novel agents may provide some clinical benefits and prolonged transfusion independence in many patients [1,7–9], regular administration of red blood cells (RBCs) concentrates continues to represent the only effective measure for most of the patients [7–9]. Appointments for medical visits, blood sample collections and transfusions, could thus represent an additional burden for these patients as they are typically provided on outpatient basis. Therefore, discomfort arising from driving distances and long waiting times in the hospital may often be important issues that could further complicate an optimal management of MDS patients and this might be particularly true for elderly patients, for those with medical comorbid conditions [10,11] or physical impairments [12–14] and social difficulties.

Relying on family members or friends for travels to hospital for visits and transfusions, may also be an additional concern and stressful factor for some patients and their families [15,16]. The above mentioned issues illustrate how challenging could be, for some patients, to follow an outpatient care program on a regular basis. Hence, choice of the clinical setting in which RBCs transfusions can be administered could be a critical aspect of the management of MDS patients. In particular, for patients with higher risk MDS and a limited life expectancy or managed with palliative and supportive care, home care (HC) could represent, wherever possible, the most appropriate approach potentially helping patients maintain a good QoL [17–19]. Previous work has shown the potential role of HC in the global management of patients affected by hematological malignancies [20–25], for whom transfusion therapy is the most frequently provided domiciliary intervention [20,23]. This is particularly true for MDS patients with functional impairments [21–24].

In this paper we report the results from the experience of our hospital-based HC service throughout a 5-year period, describing patients' characteristics, clinical indications, operating procedures and feasibility. We also focus on safety issues in the management of RBC transfusions in MDS patients at home.

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Table 1
Summary of home transfusion criteria adopted by our team.

Inclusion criteria	
Patient and disease	Patient living in Rome or within the near urban area covered by our HC service. Disease-related chronic anemia refractory to all conventional measures, including ESAs. Physical limitations and/or compromised clinical and personal status. Social and family problems resulting in the impossibility to travel to the hospital and to attend clinical visits and transfusions. Stable medical conditions.[a] Adequate venous access. Informed and written consent.
Caregiver	Responsible, capable and collaborating adult suitable at home. Other than a family member, caregiver would be also a friend or a home-aid assistant.
Home environment	Deemed adequate and suitable for a HC program. In particular, the home should be deemed easily accessible, clear, comfortable and safe to perform the transfusion. Availability of a functioning telephone.
Exclusion criteria	
Patient and disease	Patient's refusal. Urgent transfusion in emergent clinical situations.[a] Inadequate vascular accesses. Sepsis.[a] Anemia due to underlying causes (hemolysis, active bleeding, iron and vitamins deficiency and so on) potentially resolvable by other measures (vitamins, iron, steroids, correction of a coagulation defect, surgery and so on) whenever applicable.[a] Positive indirect antiglobulin test (recipient serum – donors blood cross matching) and no antigen-negative donors RBCs units (both for autoantibodies and alloantibodies). Unresolved and/or undiagnosed fever, cardiovascular instability and/or others active clinical illnesses.[a] History of previous severe transfusion-related adverse reactions.[a]
Caregiver	Patient living alone; no capable and responsible adult suitable as caregiver.
Home environment	Poor home conditions; home deemed unsafe and unsuitable for transfusion.

HC, home care; ESAs, erytropoietic stimulating agents; MDS, myelodysplastic syndromes; RBC, red blood cells.
[a] For patients on a palliative care program, such as terminally ill patients, these criteria were considered on a case to case basis.

2. Patients and methods

This retrospective study included 211 MDS followed up in a hematological HC program of St. Eugenio Hospital of Rome throughout a 5-year period (2006–2010). Patients have been admitted to hematological HC program. This HC program has been financially supported by the largest Italian Hematological Patient Association (i.e. the Roman Section of the Italian Association against Leukemias, Lymphomas and Myeloma, RomAIL) since 2006. Our staff is multidisciplinary and includes hematologists, nurses, psychologists, social workers and other health-care providers trained in hematology, palliative care and rehabilitation medicine [23,25]. The eligibility criteria for entering patients in the HC program are carefully assessed during an initial interview with the patient and the "designated" caregiver. The availability at home of a capable adult, as reliable caregiver, is the main inclusion criteria to allow patients entering the HC program. According to our working model, the caregiver, usually a member of the family is considered a key active player of our HC staff. In particular, the care giver is well informed and instructed, from the very beginning, about delayed transfusion-related reactions so as to allow him/her promptly identify adverse and relevant symptoms and inform our team. The patient's informed consent is routinely obtained before the first home transfusion. A previous history of hospital transfusion is not considered an essential condition to take patients in the HC program. Written guidelines for the management of HC transfusion, of eventually occurring clinical complications, and criteria for the rapid admission of patients in case of severe adverse events, eventually unmanageable at home, have been developed and used as standard practice guidelines. The HC team closely works with general services and diagnostic structures of St Eugenio hospital. In particular a close relationship and collaboration with the blood transfusion service (BTS) of our hospital was established. Transfusion therapy is provided as part of a global HC program and is prescribed and supervised by our specialized and multidisciplinary trained staff basing on our institutional established transfusion criteria (Table 1) and operating model (Table 2) as well as in accordance with the Italian law, local regulation and previously reported guidelines on home transfusion [18,26,27]. The responsibility for home transfusion relies on the attending hematologist and on the nurse. The former evaluates the patient's clinical status and the laboratory results. RBCs units are requested to the BTS of our hospital according to hemoglobin (Hb) levels (Hb < 8 g/dl) and/or to the clinical status and the symptom burden reported by the patient. In particular, a higher Hb threshold (Hb < 10 g/dl) is requested for patients with active cardiac and respiratory diseases. The attending hematologist assists the patient at home for all the duration of the transfusion and follows all aspects of the entire course of the HC program; moreover, all medications, such iron chelators, were given according to current practice guidelines for MDS [8,9]. The nurse is responsible for the maintenance of an adequate venous access, for the collection of blood samples for compatibility tests and for their safe transport in an adequate container to the BTS. Both the nurse and the hematologist are responsible to ensure that drugs (such as adrenaline, chlorphenamine and hydrocortisone), materials and devices to handle any emergency are available at home before transfusions. Also all team members have to ensure the continuity of the therapeutic relationship with the patient and caregiver, reporting any delayed reactions by regular telephone contacts.

3. Results

Overall, all 211 MDS patients were included in the HC program and received transfusions at home. Only 5 patients did not meet the inclusion criteria and were excluded from this HC program. Patient's characteristics at the enrolment in the HC program are shown in Table 3.

In general, the majority of patients had an adequate venous access and no long-term venous access by a central venous catheter (CVC) or long-line peripherally inserted central catheters (PICC) were requested as mandatory condition before the inclusion in the HC program; the temporary venous accesses to perform pre-transfusion blood collection and the infusion of blood components were positioned and maintained by nurses or by physicians of our HC service for the time strictly necessary.

Out of 211 patients, 174 (82%) were transfusion dependent at the start of the HC program. The remaining 37 (18%) failed ESAs and became transfusion-dependent during the HC program. At the enrolment to the HC program, median baseline Hb concentration was 8.3 (7.4–10.1) g/dl. Severe non-hematologic comorbidities were seen in 183/211 (87%) patients, with a median number of comorbid illnesses of 2 (0–6) per patient; cardiovascular and neurological diseases prevailed (Table 3). Median duration of HC was 9.2 (1–41) months. Among 211 patients, 37 (18%) patients received their first transfusion at home. Patients were followed at home for a median of 9.2 (1–41) months after the inclusion in the HC program. The median number of RBCs packages transfused for patient was 38 (range 1–162) for a total of 7766 units that were given in 4980 domiciliary transfusions. The median Hb level for which RBCs units were requested was 8.2 (range 6.9–9.8) g/dl. Nearly