To the Editors:

Allogeneic bone marrow transplant in a child with thalassaemia

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Transfusion dependent thalassaemia is a significant problem in Sri Lanka. In a study published in 2000, it was estimated that there were approximately 2000 transfusion dependent beta thalassaemia and HbE patients in Sri Lanka and the expenditure on them accounted for approximately 5% of the recurrent health budget of the country [1]. This number has by and large remained static over the past decade. An Italian group reported in 2006, that the mean cost of treatment for thalassaemia major was € 1242/patient/month with 55.5% of it attributed to iron chelation therapy and 33.2% attributed to blood transfusion [2]. Bone marrow transplant (BMT) is the only established cure for thalassaemia at present.

A 7-year old boy with severe thalassaemia was referred by the Lanka Thalassaemia Circle to the BMT Unit at the Central Hospital for a MSD BMT. He was confirmed to have beta thalassaemia by haemoglobin HPLC and had undergone over 70 blood transfusions since the age of 6 months. He was on iron chelation for the past six years. He had the same HLA type as his elder sister. HLA typing was independently performed and confirmed in two laboratories – Histogenetics, USA and DKMS (German Marrow Donor Programme), Germany.

The patient was categorised low risk by age and liver size [3]. He was admitted to the BMT Unit after insertion of a single lumen central venous line (CVL). Conditioning consisted of Rabbit Genzyme Thymoglobulin, Busulfan and Cyclophosphamide. GVHD prophylaxis consisted of cyclosporin A, a ''short'' methotrexate course and methylprednisolone. On D-0, his elder sister, who had been given G-CSF 5 u/kg sub-cutaneously for 3 days, underwent a bone marrow harvest under general anaesthesia. A total nucleated cell dose of $10x10^8$/kg was harvested and transfused to the patient via CVL without any complications. Platelet engraftment (the first day of $20x10^9$/l platelet count with no platelet transfusion in the preceding week) was on D+19 while neutrophil engraftment (the first of three consecutive days with an absolute neutrophil count $>0.5x10^9$/l) was on D+21. In the interim period he developed a CVL related, culture positive, bacterial infection that responded to first line antibiotics. He had a stable mixed chimerism of between 75%-80% donor in peripheral blood from D+30 until D+90, when it was last checked. Chimerism testing was not performed thereafter, as his haemoglobin was persistently >100 g/l. His last blood transfusion was on D+12. He remained free of cytomegalovirus infection and had no evidence of graft versus host disease (GVHD) at D+100. Tailing off cyclosporin was started very slowly. He remains transfusion-independent 9 months post-transplant, doing well with no GVHD or other transplant related complications. His performance score is 100%.

BMT can cure over 85% of low-risk children with thalassemia having a fully compatible sibling and improve health-related quality of life in the great majority of them [4]. Furthermore, it is a curative option not only for thalassaemia and haemoglobinopathies but for many high-risk haematological malignancies, aplastic anaemia, and inherited immune deficiency syndromes. Therefore, starting a BMT programme has provided the opportunity of a cure for many patients who would otherwise have to travel overseas and contributed to cost savings for the country by making iron chelation which accounts for 55% of the cost of treatment of transfusion dependent thalassaemia redundant. The BMT was performed in close collaboration with an Italian organization (Cure 2Children Foundation) that has specific experience and tools for professional support to start BMT units in low and middle-income countries.

One of the main obstacles for BMT is the lack of HLA matched donors. However, with haplo-identical transplants becoming popular worldwide and the experience in finding the right combination of drugs used for conditioning and GVHD prophylaxis increasing, it is expected that all patients could potentially have BMT in the near future with acceptable survival.

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Conflicts of interest

We declare that there are no conflicts of interest.

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