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## History of umbilical cord blood transplantation

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SIR—Wagner and colleagues (July 22, p 214) state that "The use of umbilical cord blood as a source of transplantable haemopoietic stem cells was first suggested in the early 1980s". That is incorrect. The idea of using cord blood for therapeutic purposes originated from me in Petersburg, Virginia, in the 1960s.<sup>1</sup> You may argue that we were not successful in carrying out the transplantation but the idea was ours, and at least two of the authors of the *Lancet* article are aware of our 1972 paper.

In the early 1960s I was giving cord blood randomly for advanced malignant disease to see if it would have any therapeutic effect.<sup>1</sup> In 1964 cord blood was given to a patient with subacute lymphatic leukaemia whose haemoglobin was 5 g/dL. Haemoglobin, with no other therapy, rose to 10.8. After much discussion with my brother, Dr Norman Ende, we thought we had a transplant and set out to prove it. The obstetricians never took cord blood from the afterbirth until all cord pulsation had stopped. The above patient only received about 500 mL of cord blood.

In 1966 a patient with myelogenous leukaemia was given around 500 mL of cord blood and we felt we had produced a transplant. Samples from the patient and the baby were sent to the Ortho Research Foundation, Raritan, New Jersey, for serological testing. The report on the patient's red blood cells suggested that "the only surviving cells were those of the baby, and that we might not be detecting any of [the patient's] blood. This does not seem feasible."

In 1968 a patient with acute granulocytic leukaemia was given cord blood and again we felt we had a take. We found changes in the Fy<sup>a</sup> and S factors, suggesting a transplant. The patient received chemotherapy. We did not publish this case because some of the blood used for testing antigens had haemolysed. The patient survived for more than 8 months, which was very unusual in such cases.

In 1972 we published an article in *Virginia Medical Monthly*.<sup>2</sup> This was a case of acute lymphoblastic leukaemia which by the means then available (HLA typing was in its infancy in 1970 when the patient was treated) proved we had a transplant. This patient lived for nearly a year after the graft, which again was most unusual.

In 1972 a case of aplastic anaemia was treated with cord blood and again we felt we had a transplant. HLA typing did not change, and we wondered whether it was possible to have a red cell transplant without a white cell one. That patient died from miliary tuberculosis.

All these patients came from my private practice and the work is summarised by my brother.<sup>3</sup>

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- 1 Ende U. Lymphangiosarcoma: report of a case. *Pacific Med Surg* 1966; 74: 80-82.
- 2 Ende M, Ende N. Hematopoietic transplantation by means of fetal (cord) blood: a new method. *Virginia Med Mon* 1972; 99: 276.
- 3 Ende N. Use of human umbilical cord blood for stem cell transplantation (HLA matched, unmatched; clinical, ethical, and legal aspects). In: Hematopoietic stem cells: biology and therapeutic applications. New York: Marcel Dekker, 1995.