Review of: "Decontamination of Two Umbilical Cord Blood Grafts Prior to Autologous Administration"

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Potential competing interests: No potential competing interests to declare.

This study from Dr Dumitrescu sought to investigate the merits of testing and decontaminating human CB grafts for bacterial contamination prior to autologous stem cell transplantation. The investigation provides some neat clinical observations showing that such an approach is atleast viable and compatible with patient survival. However, any physiologically significant conclusions to be drawn from the work are hampered by limited medical relevance, small patient numbers and poor assessment of stem cell function.

Given all patients are treated prophylactically with broad spectrum antibiotics during the transplant procedure anyway, there are questions over the medical benefit of pre-treating a CB sample with antibiotics pre-infusion. One could envisage a useful scenario where a specific antibiotic-resistant bacterium is identified and eradicated prior to infusion, however the global frequency of this during transplantation is unclear and would it override the risks of harming the CB material during the testing/treatment time. The authors themselves only quote a single fatality that's been recorded in the discussion section, but if there are others and this represents a persistent clinical problem, then it shold be better rationalised in the introduction.

The study only tracks the progress of two transplant recipients. This is understandable as these procedures are rare (even more so those with auto-cord graft) and obtaining suitable patient numbers to draw any kind of conclusions would probably require multi-centre trials over decades. However, it does limit the study's ability to assess the medical benefit of this intervention.

Finally, the study lacks a specific analysis of the actual cell type responsible for the successful engraftment of the recipient bone marrow; CD34+ haematopoietic stem cells (HSC). Both figures 1 and 2 should be tailored to look at the viability of the CD34+ component of the CB samples which is certainly feasible by the flow cytometry. One has to assume HSC maintained a degree of viability since the patients were still alive 6mo and 1yr post transplant, and no blood counts abnormalities were reported. But a more accurate assessment of the engraftment time and haematopoietic output from these pre-treated stem cells over time would be useful. Representative and summary blood count numbers for each patient should be provided and compared with expected rates. Again, if there was an issue with antibiotics affecting HSC viability/function, we'd expect to have observed it from standard methods of transplantation, but the pre-treatment is the novel component to this study and it should be verified.

Minor points included the lack of experimental detail in the figure legends which should indicate time of assessments.

Figure 3 is also an overview of study methodology which should be placed in the methods section so readers can more easily follow.