

Monocyte profile in hypertrophic scar development following paediatric burn injury

Sasi Suda^{1,2}, Helen Williams², Heather J. Medbury², Andrew J.A. Holland¹

1 The Children's Hospital Burns Research Institute, The Children's Hospital at Westmead, The University of Sydney, Locked Bag 4001, Westmead, NSW 2145, Australia.

2 Department of Surgery, Vascular Biology Research Centre, Westmead Hospital; Sydney Medical School, The University of Sydney, New South Wales, Australia.

Background: Paediatric burns remain a common injury, after which many patients develop a severe form of scarring known as hypertrophic scarring (HTS). HTS arises from excessive collagen production during wound repair. An important cell type in wound repair is the monocyte, which displays an altered profile in many wound models. As such, the function of monocytes and monocyte-derived cells in burns is of interest. Here we investigated the post-burn profile of monocytes and monocyte-derived fibrocytes.

Method: Blood samples were collected from paediatric burn (n=14) and control patients (n=12). For those patients having further procedures (n=3), a subsequent blood sample was collected approximately one week later. Whole blood flow cytometry was used to determine the expression levels of different monocyte markers which reflect function, such as inflammatory profile, adhesion and migration capacity. In addition circulating fibrocytes were quantified.

Results: Monocytes did not differ between patients and controls in the level of expression of inflammatory, adhesion or migration markers. There was, however, a significantly higher proportion of fibrocytes in burn patients compared controls (P=.001). For patients from whom a second blood sample was collected, there was a decrease in fibrocyte numbers over time.

Discussion: Burn patients have a higher proportion of fibrocytes than healthy control patients. Fibrocytes appear to be involved in the immunological response to burn wound injury and may correlate with the later development of hypertrophic burn wound scarring as such, the patients in this study will be followed up for the development of HTS.

Key Words

Monocytes, macrophages, fibrocytes, hypertrophic scarring

Nominated Stream for Oral Presentations

- Medical
- Nursing
- Allied Health
- Scientific

Nominated Stream for Poster Presentations

- Care
- Prevention
- Research