Impaired skin wound healing in inducible nitric oxide synthase knockout mice

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[Introduction] Rapid skin wound healing is essential to survive in a hostile environment for protective barrier against infection. NO plays an important role in skin wound healing and is implicated in the wound healing process.

[Materials and Methods] iNOS-KO mice and wild type mice were used in the experiment. Under general anesthesia by pentobarbital sodium, two round full-thickness cutaneous defects of 5.0 mm in diameter were produced in dorsal skin using a sterile disposable biopsy trephine. The size of remaining skin defect was measured using Photoshop and statistically analyzed in each time point.

[Results] At day 7, the remaining skin defect was larger in iNOS-KO mice than WT mice with a statistical significant difference. HE staining showed that the thickness of the granulation tissue was significantly thicker in iNOS-KO mice. Alpha-SMA staining indicated that the nature granulation tissue was similar between WT and iNOS-KO mice. Distribution of F4/80-labeled macrophages and myofibroblasts as detected by alpha-SMA expression seemed similar between WT and NO mice.

[Conclusion] These observations demonstrated that skin wound healing was delayed in the NO-KO mice and NO was implicated in the wound healing process.

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