



The efficacy of Hemoglobin spray between waiting for Hyperbaric Oxygen Therapy in Ischemic ulcer (Case Series)



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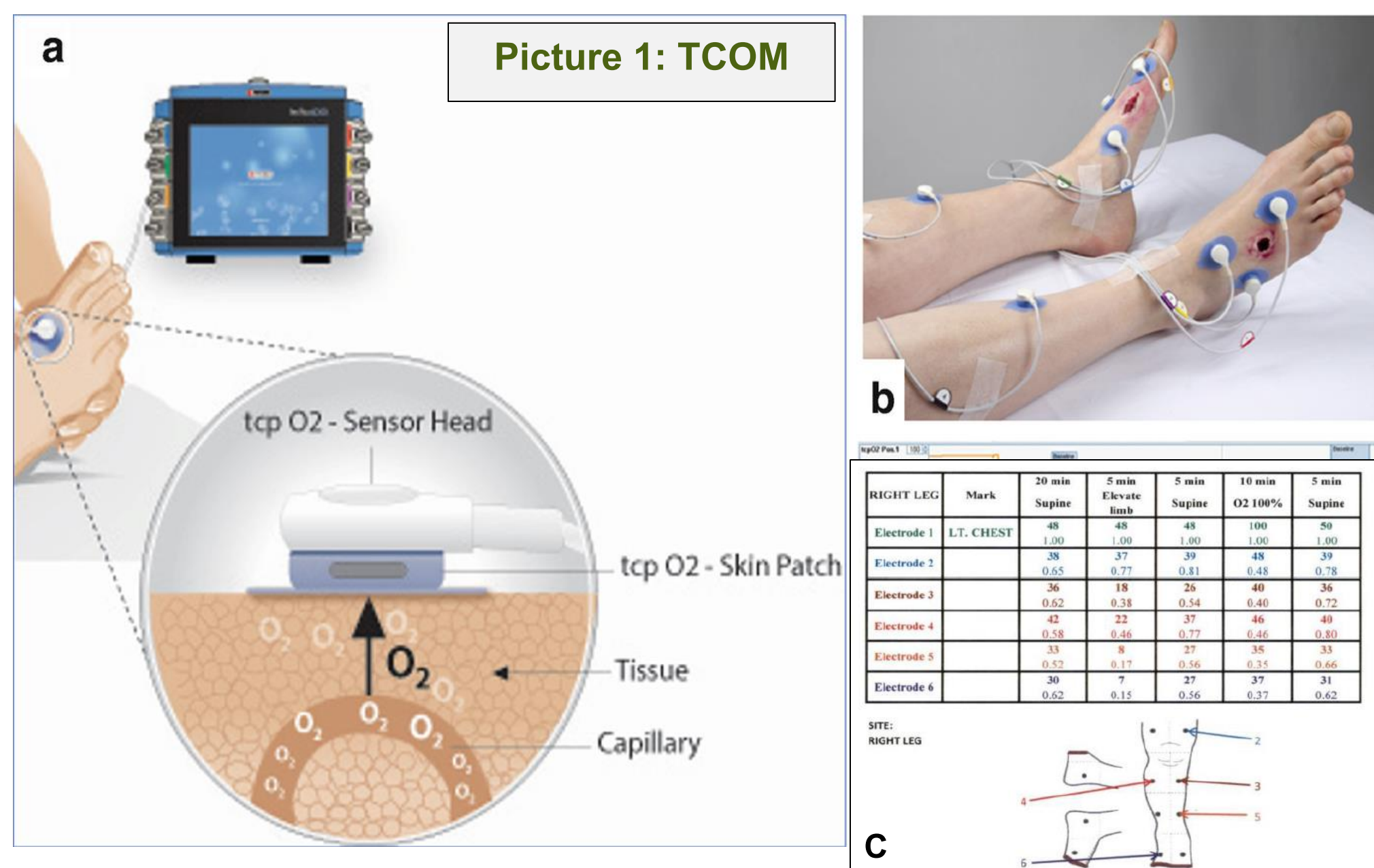
Introduction

Oxygen is very important in the wound healing process. Both in the reacting of cell metabolism for energy synthesis and supporting to stimulate collagen synthesis and crosslink. That also Stimulating endothelial progenitor cells to generate endothelial growth factor for angiogenesis.⁽¹⁾ The study found that the fibroblast has increased in oxygen environment at least 15 mmHg. The fibroblast activates procollagen gene and transforms fibroblast to myofibroblast which causes shrinkage of the wound⁽²⁾ It was also found that Oxygen therapy has statistically significant reduced infection in chronic diabetic wounds. (P<0.05)⁽³⁾

Transcutaneous oximetry: TcPO₂, TCOM (picture 1) is non-invasive test to measure the amount of oxygen diffused from the capillaries to the skin. It is applied by patching the signal guide pad on skin around the wound. The average oxygen value around the wound can help to predict the wound healing and screening the atherosclerosis. It also use for identify the location of leg amputation from a chronic wound, predict success rate of revascularization and indicate for hyperbaric oxygen therapy (picture 2)⁽⁴⁻⁵⁾. The patient had a TCOM of more than 40 mmHg, of which all progressed to complete ulcer healing (p<0.001)⁽⁶⁾

Aim

This case series report to demonstrate the effectiveness of hemoglobin spray to promote the wound healing process in ischemic ulcer patients which have TCOM ranged from 20 – 40 mmHg and have response of TCOM on oxygenation.



Result

The Table provides an overview data and picture of 6 cases .

| No. | Patient history | TCOM | Pictures |
|-----|---|------|----------|
| 1 | <ul style="list-style-type: none"> 74-year-old male DM, HT, S/P PCI on ASA, Plavix Present with wet gangrene Lt. foot (Rutherford 6), Emergency admit for DB + ATB + Angioplasty (7-01-2021) Start date: 08-Feb-2021 (52.9 cm²) Final date: 30-Jun-2021 (0 cm²) | | |
| 2 | <ul style="list-style-type: none"> 68-year-old male DM, HT, Anemia, on ASA Present with wet gangrene Lt. heel (Rutherford 6), Emergency admit for DB + ATB + Angiogram + Angioplasty (9-03-2021) Start date: 22-Apr-2021 (56.3 cm²) Final date: 26-Oct-2021 (1.8 cm²) | | |
| 3 | <ul style="list-style-type: none"> 65-year-old male DM, HT, DLP, Old CVA Present with Infected amputation ulcer Lt. foot Elective admit for forefoot amputation + Angioplasty (9-02-2021) Start date: 20-Apr-2021 (55.4 cm²) Final date: 17-Jun-2021 (11.9 cm²) | | |
| 4 | <ul style="list-style-type: none"> 82-year-old male DM, HT, DLP, S/P PCI Present with infected amputation Lt. 5th toe Emergency admit for DB + ATB + Angioplasty (1-03-2021) Start date: 19-Jun-2021 (8.2 cm²) Final date: 13-Sep-2021 (5.6 cm²) | | |

Conclusion

The hemoglobin spray has effectiveness to promote the wound healing process in ischemic ulcer patients which have TCOM ranged from 20 – 40 mmHg and have response of TCOM on oxygenation. It can be effective to promote wound healing when adjunct with standard care during patient waiting Hyperbaric oxygen therapy with highly patient compliance. In the other way, The hemoglobin spray also have the cost effectiveness when compare with Hyperbaric oxygen therapy which has high cost per course (3,500 baht/visit and 30 visits/course).



Picture 2: Hyperbaric Oxygen Therapy

Reference

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