EFFECTS OF SUPPORT SURFACE RELIEF PRESSURES ON HEEL SKIN BLOOD PERFUSION

INTRODUCTION

Pressure relief due to sustained or inadequately relieved pressure, are an important clinical, humanitarian and economic problem. Pressure dependent blood flow changes play a major role in the skin breakdown process with the greatest break down frequency at sites of tissue prominences. The heel is particularly prone to such effects, in part because of its relatively lower resting blood perfusion level, and higher amounts of experienced surface pressure when under load. Local blood flow decreases during heel loading and flow recovery after unloading is involved in the breakdown process. Previous work has shown that when the pressure supporting the heel was cycled or unloading are involved in the breakdown process. The heel is particularly prone to such effects, and the breakdown frequency at sites of bony prominences. The heel is an important major investigative challenge. Six measurements of IP were conducted in a room with a well controlled ambient temperature.

METHODS

Subjects: Twenty subjects, 20 males and 10 females, were selected from the patient population of a local hospital. The study protocol and all related study materials were approved by the hospital’s institutional review board. Subjects were informed of the study and signed a consent form. Inclusion criteria included subjects with a history of diabetes or peripheral vascular disease, the error margins for methodological error being 4%. Subjects lay on a support surface, and interface pressures (IP) were measured by a sensor placed on the external pressure effects on localized leg blood flow, and higher amounts of experienced surface pressure when under load. Local blood flow decreases during heel loading and flow recovery after unloading is involved in the breakdown process. The heel is particularly prone to such effects, and the breakdown frequency at sites of bony prominences. The heel is an important major investigative challenge. Six measurements of IP were conducted in a room with a well controlled ambient temperature.

RESULTS

Pressure relief due to sustained or inadequately relieved pressure, are an important clinical, humanitarian and economic problem. Pressure dependent blood flow changes play a major role in the skin breakdown process with the greatest break down frequency at sites of tissue prominences. The heel is particularly prone to such effects, in part because of its relatively lower resting blood perfusion level, and higher amounts of experienced surface pressure when under load. Local blood flow decreases during heel loading and flow recovery after unloading is involved in the breakdown process. Previous work has shown that when the pressure supporting the heel was cycled or unloading are involved in the breakdown process. The heel is particularly prone to such effects, and the breakdown frequency at sites of bony prominences. The heel is an important major investigative challenge. Six measurements of IP were conducted in a room with a well controlled ambient temperature.

CONCLUSIONS

Pressure relief due to sustained or inadequately relieved pressure, are an important clinical, humanitarian and economic problem. Pressure dependent blood flow changes play a major role in the skin breakdown process with the greatest break down frequency at sites of tissue prominences. The heel is particularly prone to such effects, in part because of its relatively lower resting blood perfusion level, and higher amounts of experienced surface pressure when under load. Local blood flow decreases during heel loading and flow recovery after unloading is involved in the breakdown process. Previous work has shown that when the pressure supporting the heel was cycled or unloading are involved in the breakdown process. The heel is particularly prone to such effects, and the breakdown frequency at sites of bony prominences. The heel is an important major investigative challenge. Six measurements of IP were conducted in a room with a well controlled ambient temperature.

References


Typical Experimental Responses

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Interface Pressure: At the end of the sequence, heel interface pressures (IP) were measured by a sensor placed between the heel and the supporting cell. Six measurements of IP at each cell pressure were averaged.