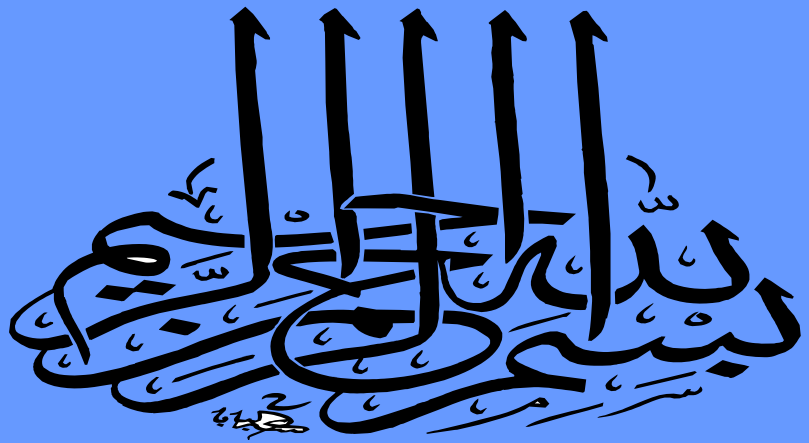


قَالُوا سُبْحَانَكَ لا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

سورة البقرة
أية (٣٢)

. EFFICACY OF POLARIZED LIGHT VERSUS GALLIUM-ARSENIDE LASER IN THE TREATMENT OF PRESSURE ULCERS

AHMED MAMDOUH MOHAMED ABD AL-KADER

فاعليـــــة الضـــــوء المستقطـــب مقابـــل الجاليوم – ارسينايـــد ليزر في علاج قرح الفراش

أحمد ممدوح عبدالقادر

Pressure ulcers emerge as a result of direct pressure, causing tissue ischemia, friction, shear force or mechanical stress on the tissue. These factors in combination with numerous intrinsic factors increase risk and if appropriate action is not taken, tissue damage occurs. Although some variables are involved with pressure ulcers cases, it is clear that pressure over bony prominences and shearing force are the key of the etiological factors and main causes of the pressure ulcers problem. Superficial tissue ulceration can be caused by the effect of mechanical forces acting on the localized areas of skin and subcutaneous tissue.

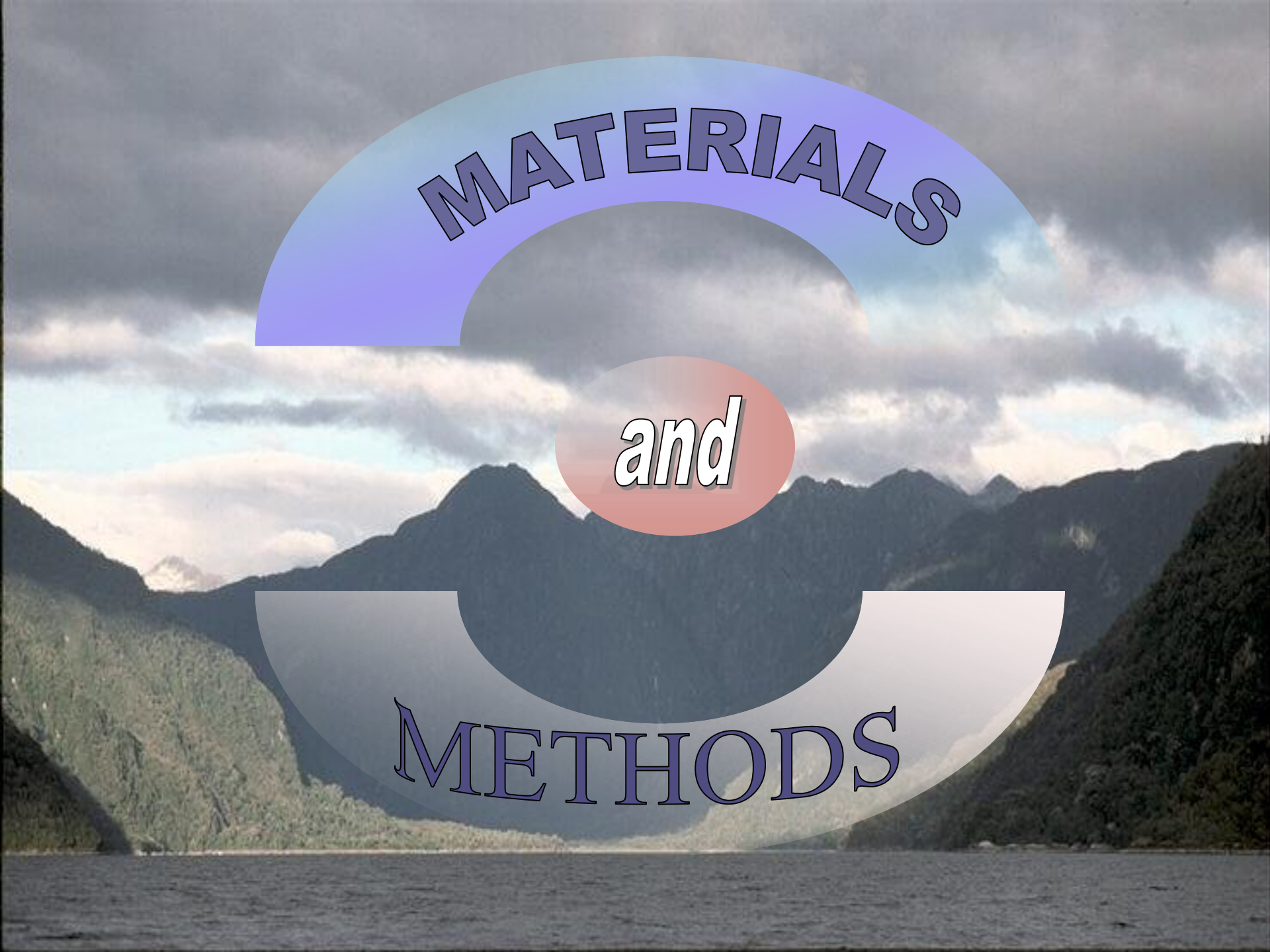
Pressure ulcers are a prevalent and potentially serious medical problem, particularly among population whose skin is more prone to breakdown, as elderly injuries and other co-morbidities as diabetes. Pressure ulcers occur in all age groups from children to young adults, from middle age to elderly. In the sitting dependent, 75% of all patients will experience breakdown, and by far the most common sites for these pressure ulcers are the ischium, coccyx and sacrum. Patients will have a recurrence of the same skin breakdown.

Bioptron light therapy device emits light that is polarized, polychromatic, non-coherent and of low energy. The light emitted has a wide range of wavelengths (480-3400nm) and differs from laser light, which is mono-chromatic (of narrow wavelength), coherent, polarized and of high or low energy. Possible risk of burns is present with the laser therapy, while not possible with the Bioptron light therapy. User skills are essential in laser therapy, but not essential with the Bioptron light therapy.

Laser is an acronym for light amplification by stimulated emission of radiation; it is a form of phototherapy which involves the application of monochromatic light over biological tissue to elicit a biomodulative effect within that tissue. Research into the role of low level laser therapy LLLT began in the late 1960s in Eastern Europe. The earliest experimental application of low power laser in medicine was reported in 1968 by Endre& Mester in Hungary who revealed that a ruby laser treatment accelerated healing of mechanical wounds and burns.

- **Purpose of the study:**

The purpose of this study was to investigate the effect of Bioptron light therapy versus Ga-As laser in treating pressure ulcers.


MATERIALS
and
METHODS


Subjects

THE STUDY GROUPS

Group (B)

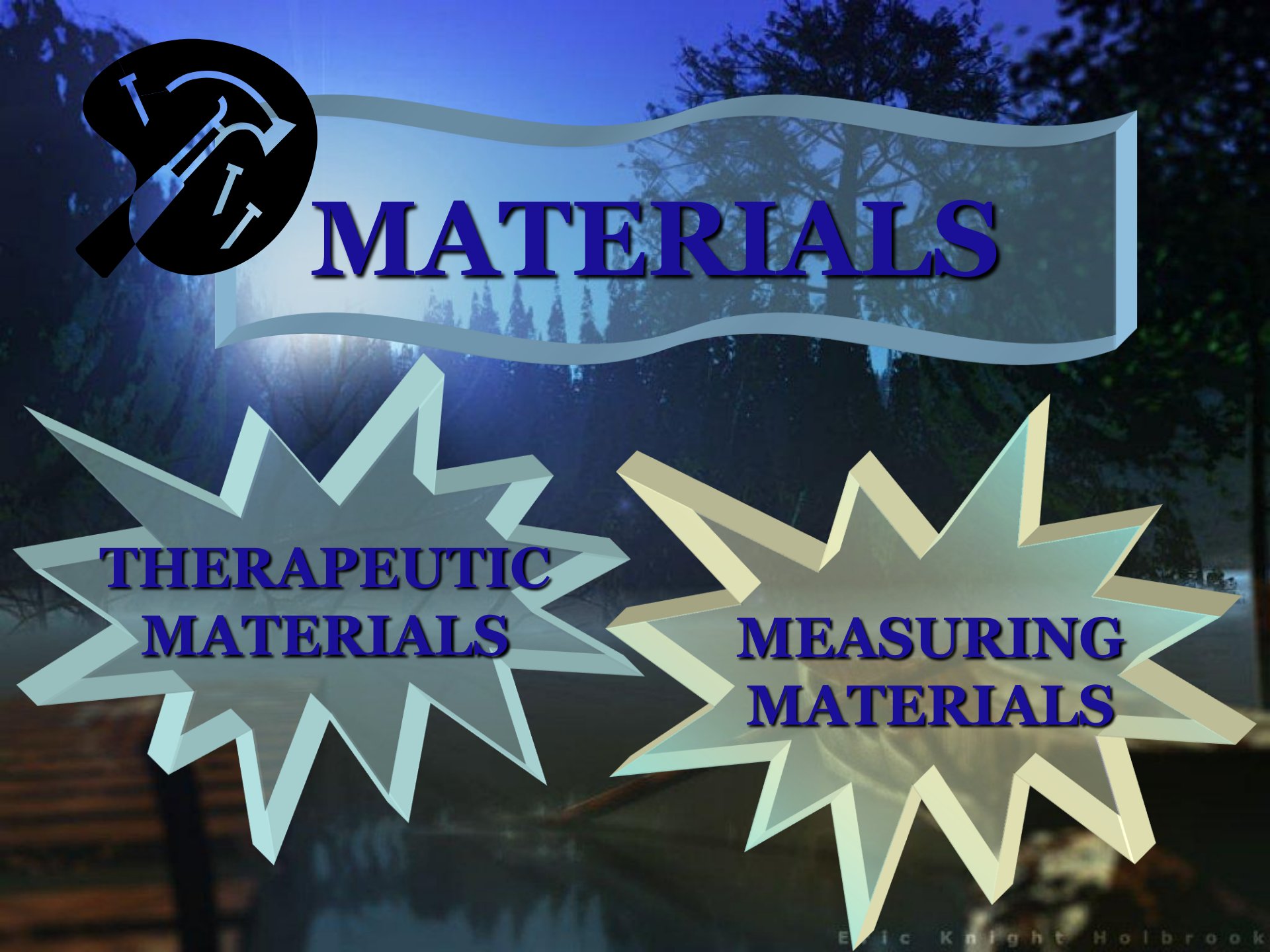
Ga-As laser group.

Group (A)

Bioptron light therapy group

Group (C)

Control group


MATERIALS
THERAPEUTIC MATERIALS
MEASURING MATERIALS
Eric Knight Holbrook

Measuring equipment.

. Tools of ulcer surface area measurement in cm^2

Measuring ulcer volume in CC via syringe and saline.

Therapeutic device

Bioptron Compact III polarized light therapy system on stand.

Laser device

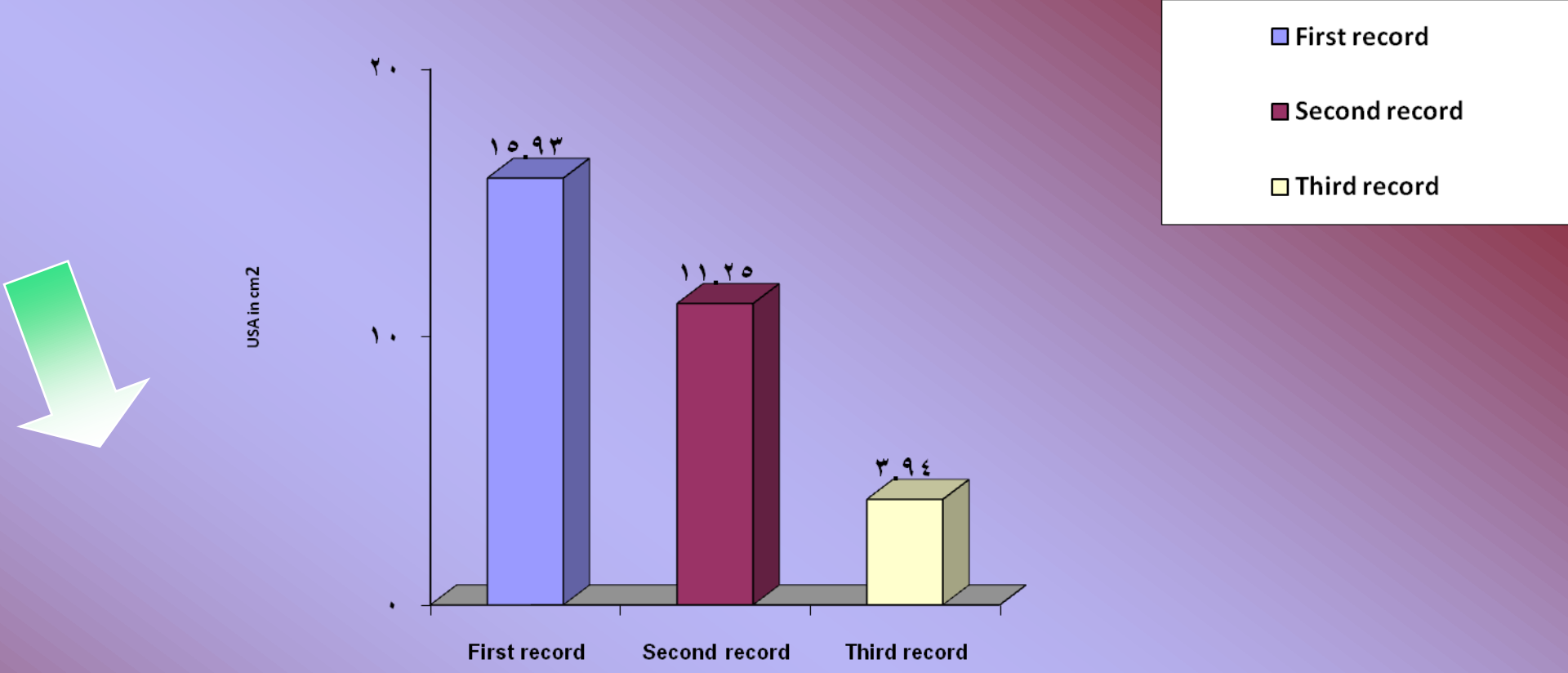
Measurement of ulcer surface area (USA): in cm^2

Tools of Ulcer volume measurement (UVM).

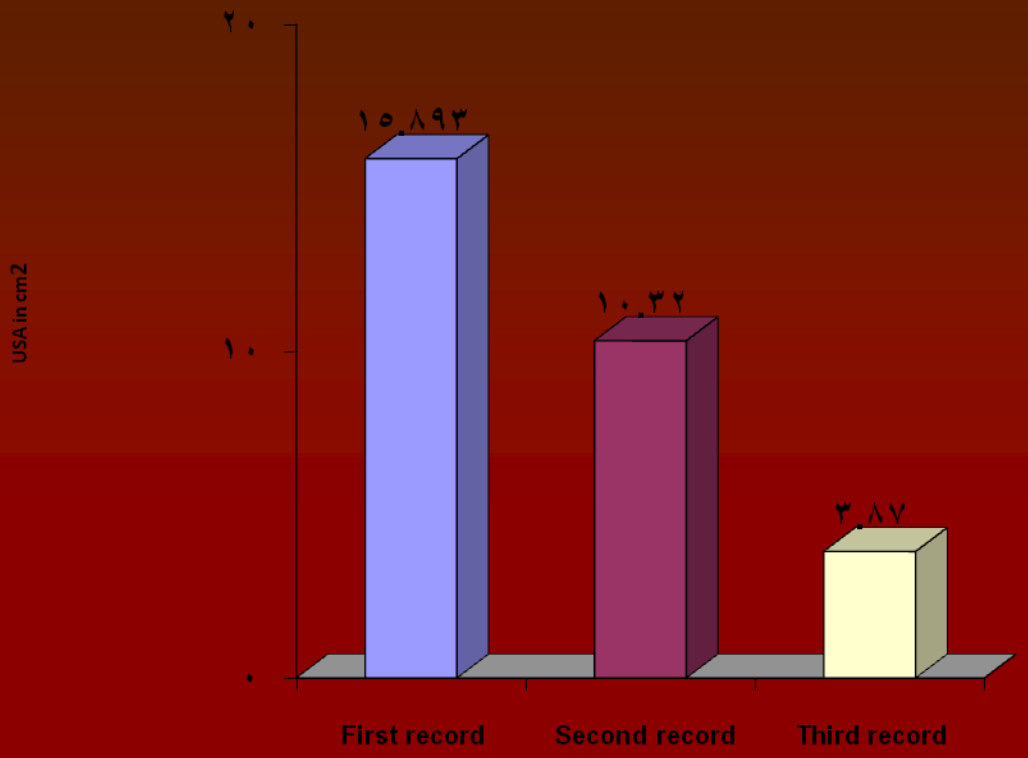
. BLT application

Laser application.

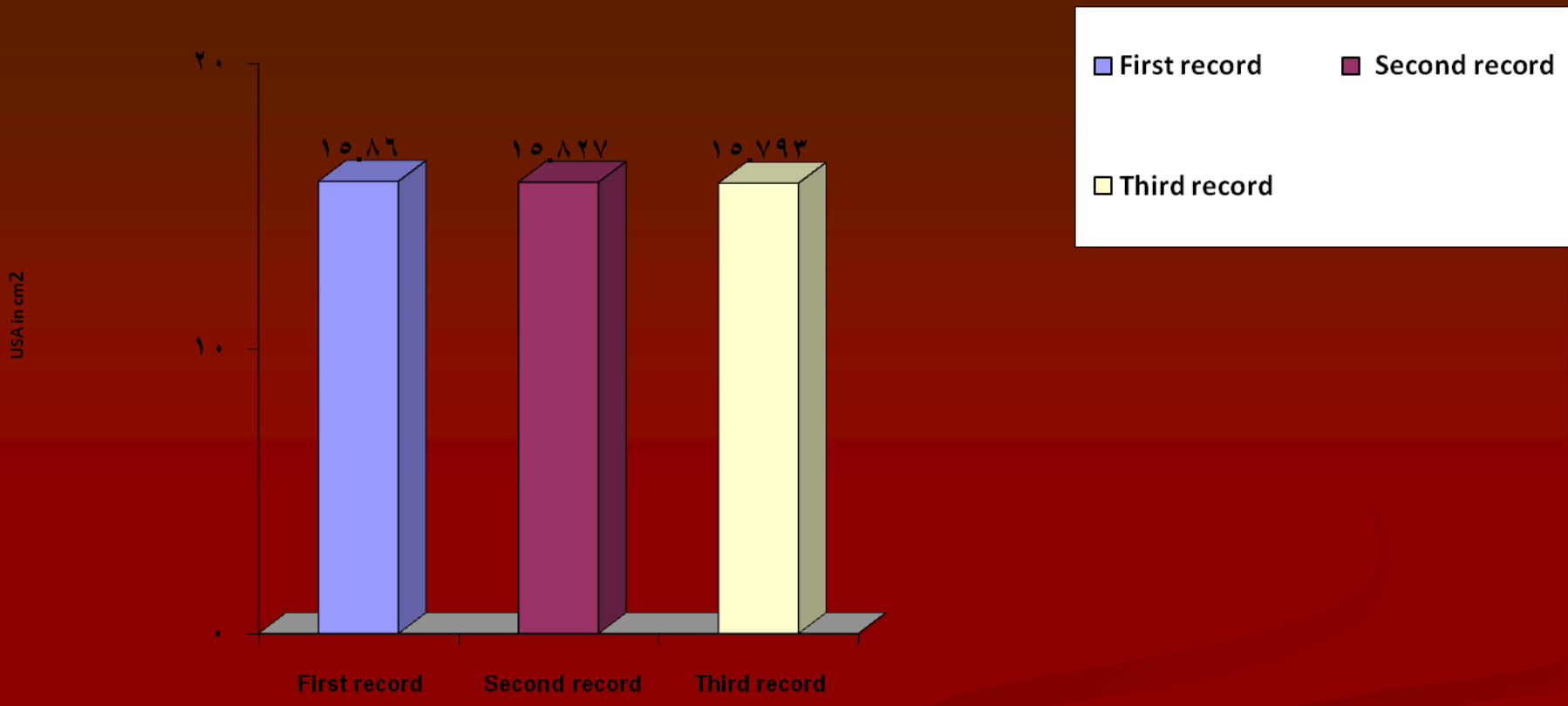
RESULTS



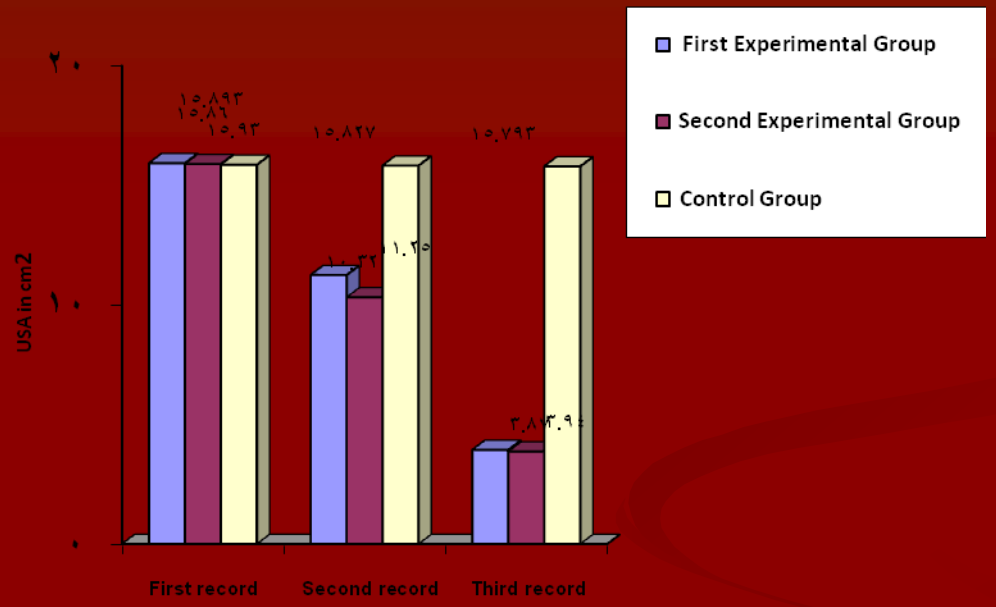
Bars representing the mean values of ulcer surface area in cm^2 of the 3 records of the first experimental group (Polarized light therapy application).



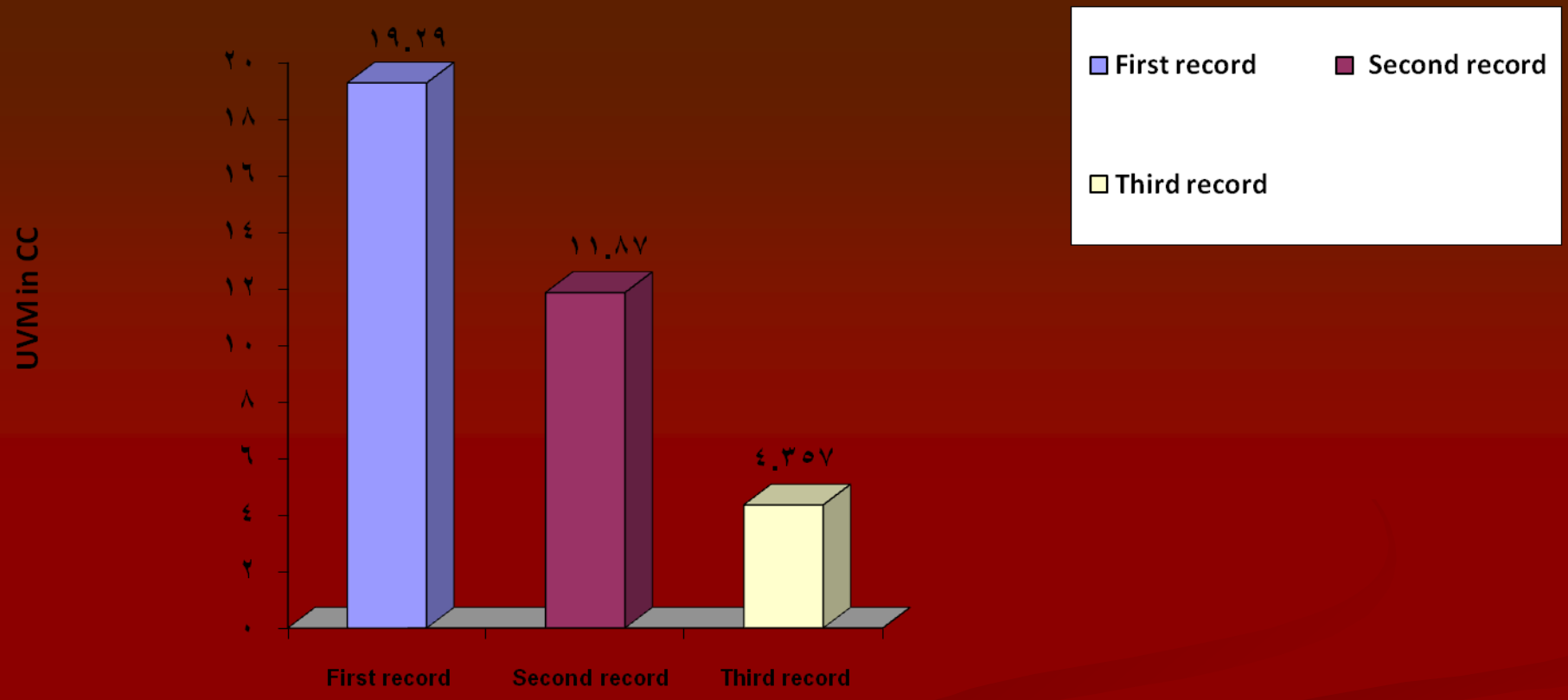
- Bars representing the mean values of ulcer surface area in cm^2 of the 3 records of the second experimental group (Ga-As Laser group).



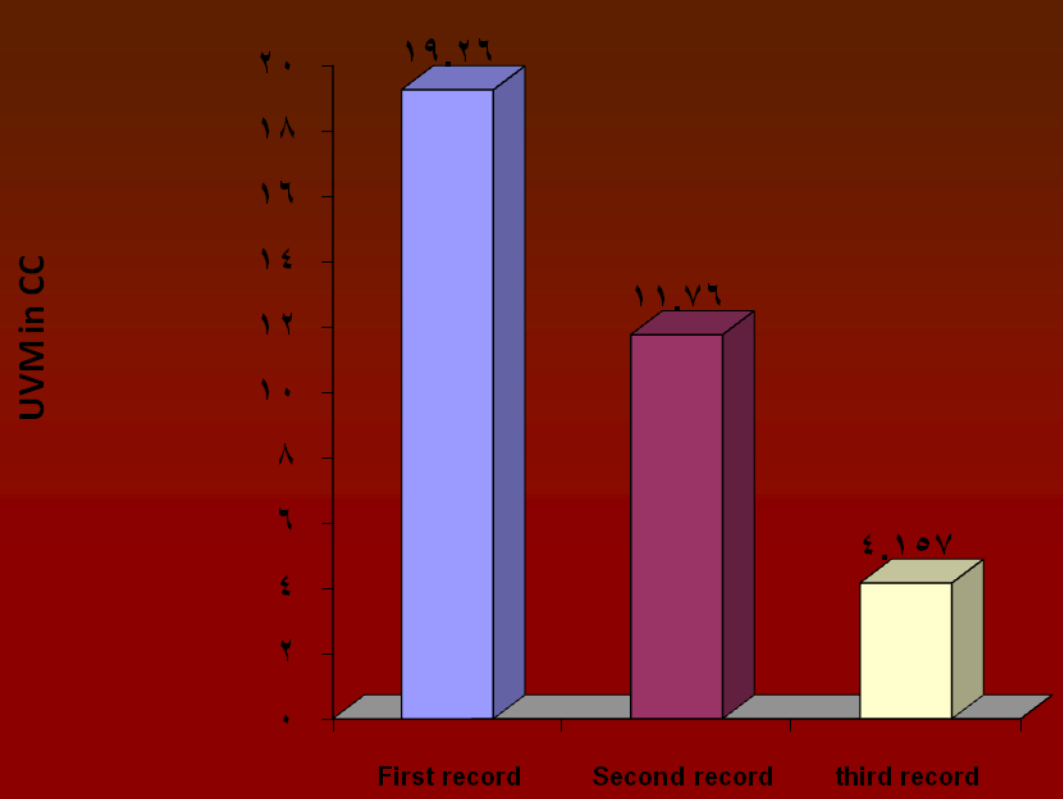
Bars representing the mean values of ulcer surface area in cm^2 of the 3 records of the control group.



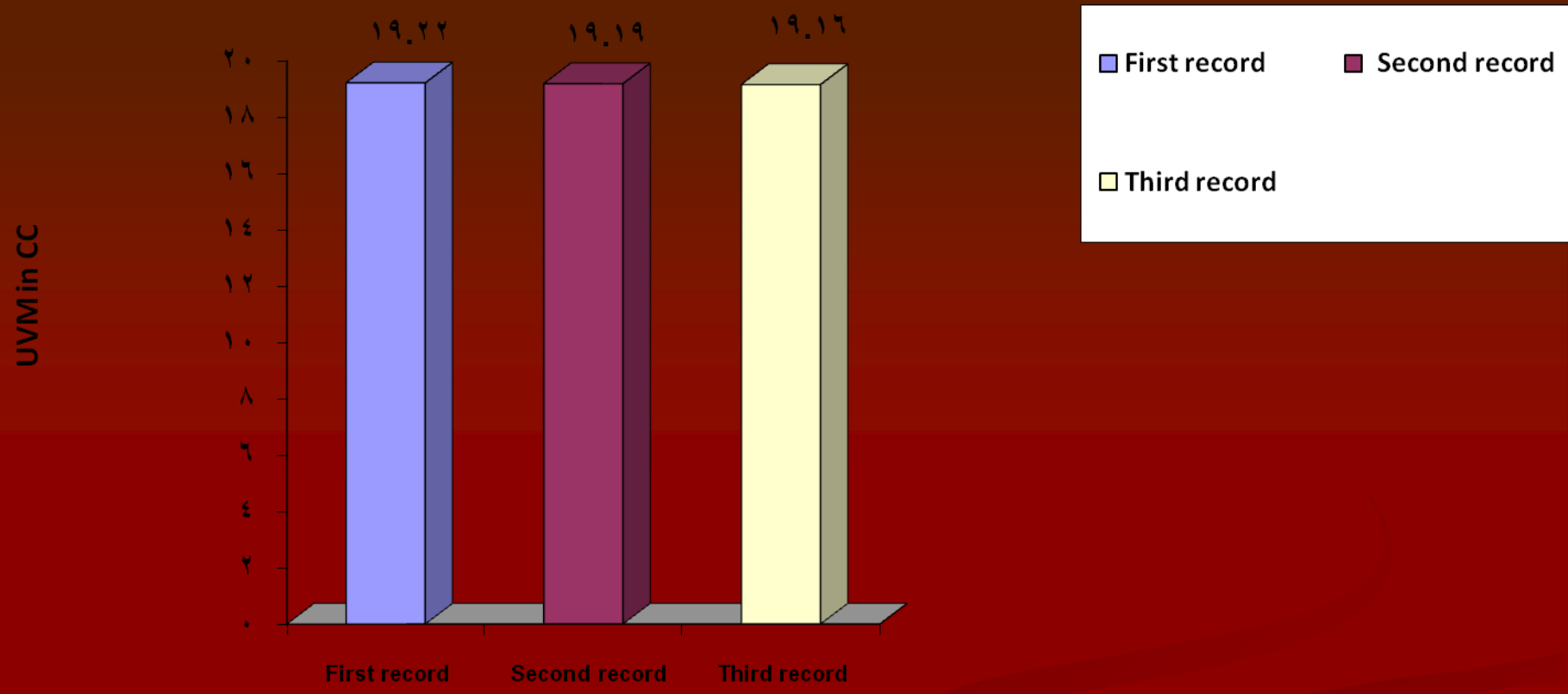
- Bars representing the mean values of ulcer surface area in cm^2 of the 3 records of the control and the two experimental groups.



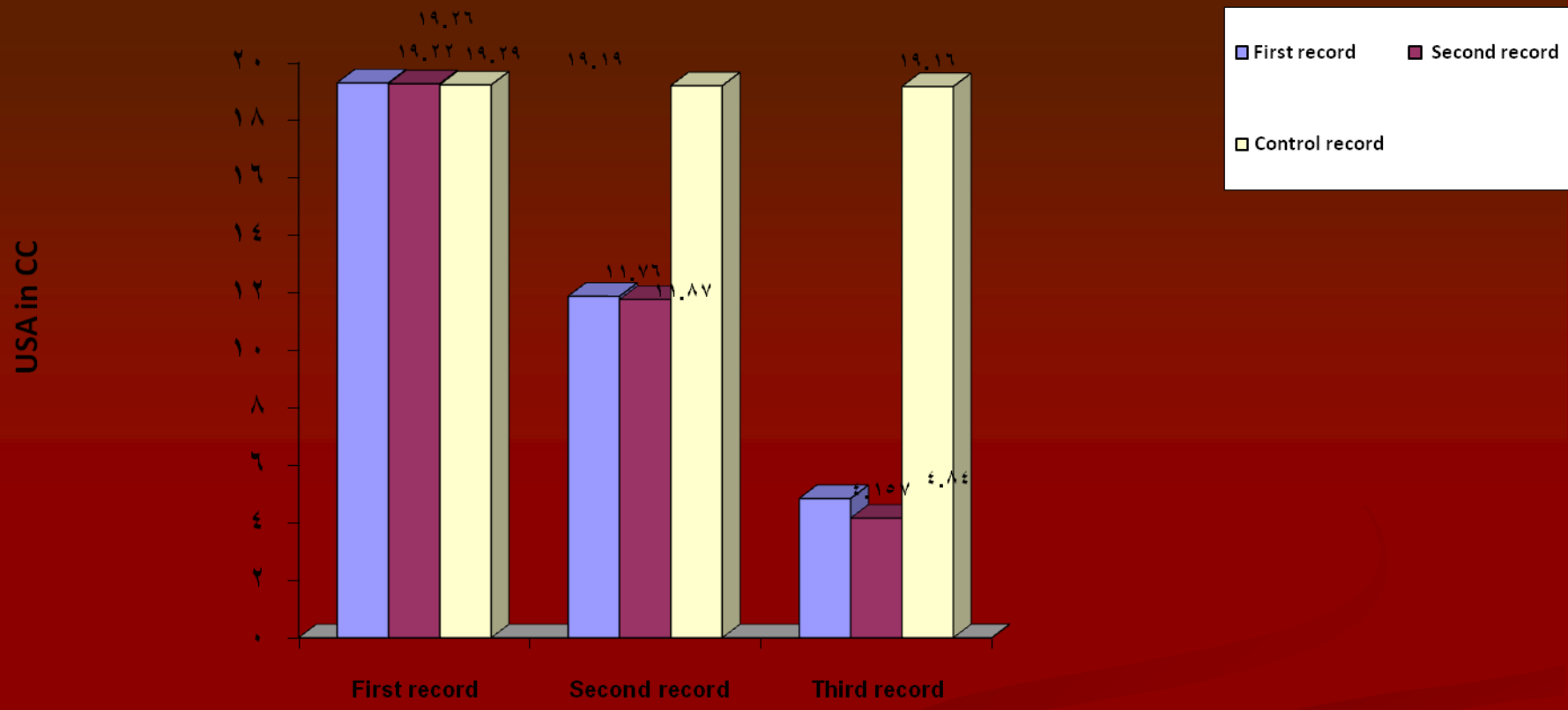
- Bars representing the mean values of ulcer volume measurement in CC of the first experimental groups.



- Bars representing the mean values of ulcer volume measurement in CC of the 3 records in the second experimental group (Ga-As Laser application).



- Bars representing the mean values of ulcer volume measurement in CC of the 3 records in the control group..

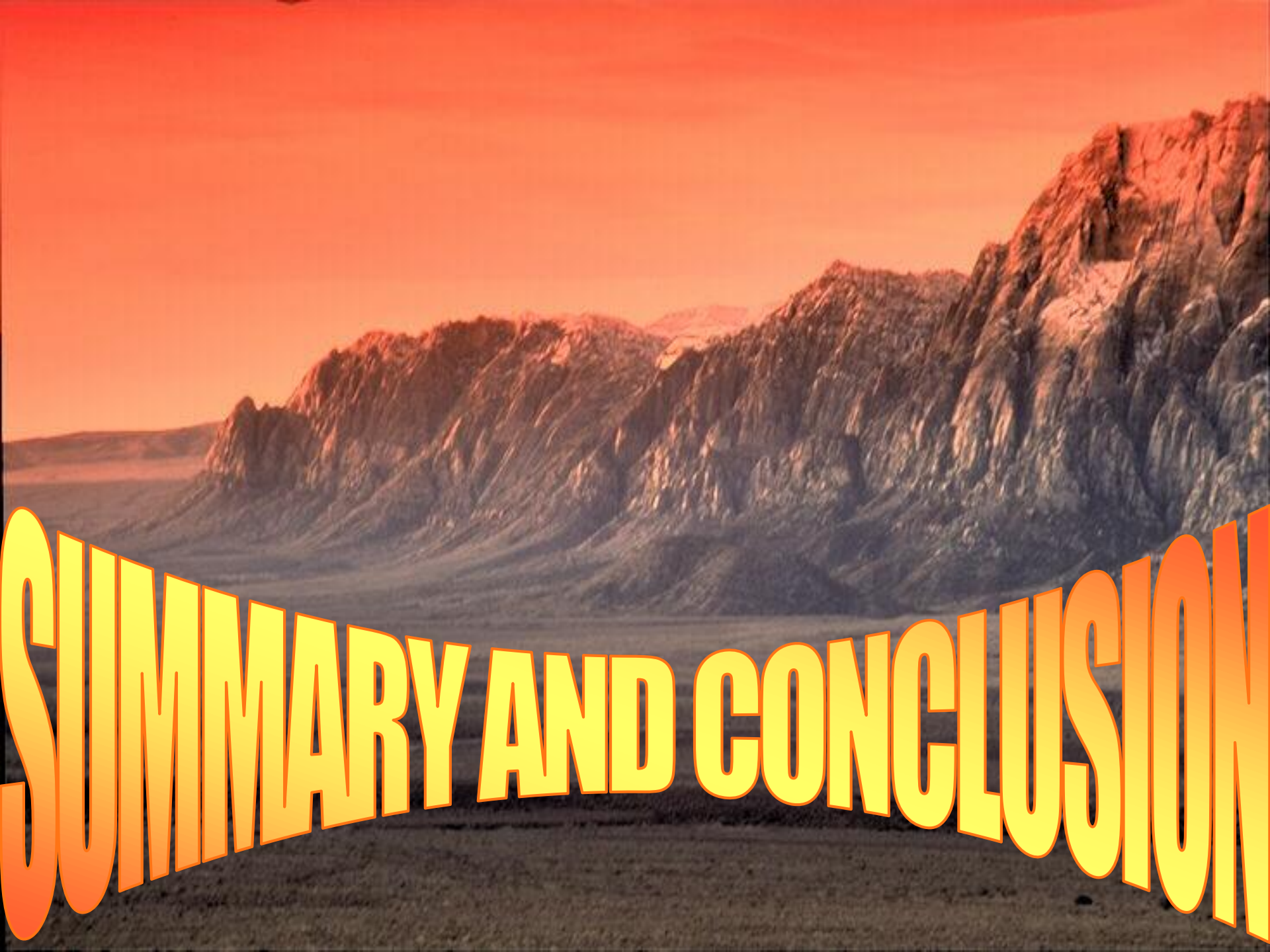


- Bars representing the mean values of ulcer volume measurement in CC of the 3 records of the control and the 2 experimental groups.

Discussion

significant differences, between the first experimental (Polarized light therapy application) and the control (Regular wound care application) groups, between the second experimental (Ga-As Laser application) and the control (Regular wound care application) groups, as well as between the first experimental (polarized light therapy application) and the second experimental (Ga-As Laser application) groups, which were in the form of a highly significant decrease in the USA and UVM, were consistent with those observed and recorded by Altland et al., 2004; Amir et al., 2000; Antonio et al., 2007; Ballyzek et al., 2005; Bolton and Young, 2008; Brosseau and Morin, 2008; Coce et al., 2003; Damante et al., 2004; Demir et al., 2004; Depuydt et al., 2009; Franek et al., 2002; Greco et al., 2001; Hoeksema et al., 2002; Iordanou et al., 2007 and Simon, 2004.

Eventually, , after the discussion of the results and according to reports of the previous investigators in fields related to this study, it can be claimed that the application of both polarized light therapy and Ga-As laser had a valuable healing effects The results of this study supports the expectation that both the polarized light therapy and the Ga-As laser were effective and nearly equivalent in enhancing healing of pressure ulcers in patients with complete or incomplete spinal cord injury, as manifested by the highly decreases USA and UVM.


SUMMARY AND CONCLUSION

This study indicated that there was a highly significant decrease in the mean values of both USA and UVM after half a month and after a month application of the Ga-As laser in the second experimental group compared with that of the control group after half a month and after a month application of the regular wound care. The results for this study showed that there was non-significant difference in the mean values of both USA and UVM after half a month and after a month application of the polarized light therapy in the first experimental group compared with that of the second experiment group after half a month and after a month application of the Ga-As laser.

application.

Conclusion

Both the polarized light therapy and the Ga-As laser were effective and nearly equivalent in enhancing healing the pressure ulcers in patients with complete or incomplete spinal cord injury as manifested by the highly decreases in ulcer surface area and ulcer volume.

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THANK YOU