TREATMENT OF COUPEROSE WITH THE KRYPTON SURGERY LASER

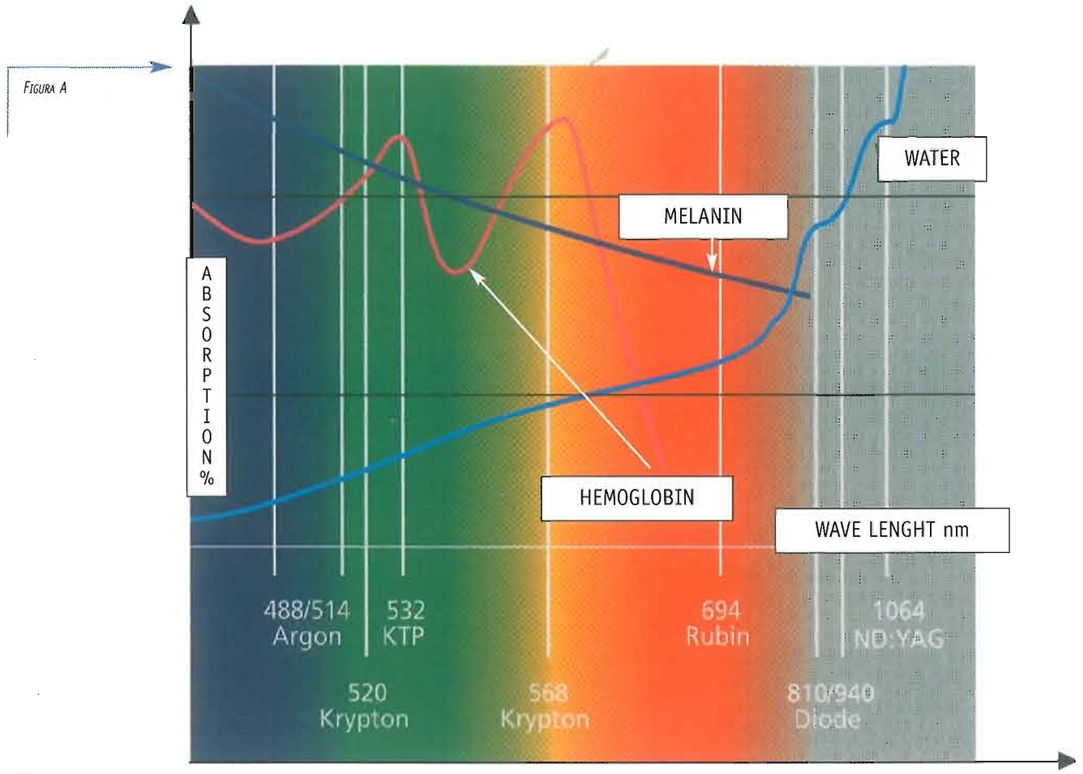
CASE REPORT - WORK IN PROGRESS..

Dr. Roberto MAZZANTI, Director of the Polyspecialistic Medical and Surgical Centre, Senigallia, Ancona - Italy.

INTRODUCTION

Krypton vascular laser. The ARC vascular laser uses Krypton as the source. Krypton can emit two different frequencies, 520 nanometers (green light) and 568 nanometers (yellow light). By means of a special filter, it is possible to use the laser emission with the 568 nm frequency only.
Maximum adjustable power emission is 1.4 Watts if the filter is used (in this way only the 568 nanometer frequency, with the yellow light, is available), and 4.0 Watts if both frequencies are used.
By means of the optical fiber it is possible to obtain a maximum focalisation spot diameter equal to Ô=200 microns.
The advantages of utilising the Krypton laser are summarised here below :
-- The emission frequencies account for the maximum c (520 nanometers) and hemoglobin (568 nanometers) absorption peak, vis-à-vis a minimum absorption by the epidermis (Figure A). This condition makes the laser particularly selective with regard to the target, and so in order to carry out the treatment, local anesthesia with lidocaine is not required.
-- Due to the possibility of modulating the source, together with its selectivity, it is possible to treat vascular pathologies effectively, using powers that are not very high, with a minor risk of thermal damages.
Due to the emission times, vessel coagulates and does not "break", as in the case of other systems that use the same frequencies (e.g. the Dye Laser).
-- With the 200 micron spot, it is possible to treat almost all the "linear" vascular lesions (for example telangiectasia and couperose), with great precision and low powers, limiting the absorption by the epidermis, with a consequent decrease in the risk of scar residues and depigmentation.

FIGURA A



MATERIALS AND METHODS

A treatment programme for couperose in a clinical case is indicated, as an example.
The treatment of couperose is subdivided into a total of two-three sessions, which must be carried out one month after the previous one. In this case the patient was affected with diffused couperose, which was present since adolescence.

The first treatment was carried out with a power of 0.80 Watts and a radiation emission time equal to 0.30 seconds, using a spot that was focalised at_= 200 microns and proceeding with single impulses.
The calculation of the flow of each single impulse was equal to:

Emission time: 0.3 sec

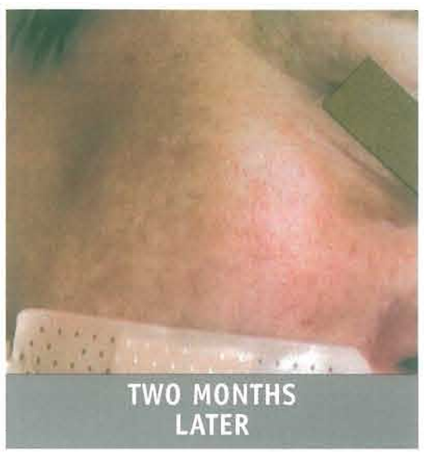
Power at 568 nm: 0.8 W

Spot _ = 0.2 mm: A = 0.032 mm²

$$\text{FLUENCE } F = \frac{0.3*0.8}{0.032} = \frac{0.24}{0.032} = 7.5 \text{ Joule/mm}^2$$

As usual, just one passage was sufficient in order to obtain the whitening effect, which is essential in order to monitor the result of the intervention (as it is a confirmation of the coagulation of the treated vessels). Ice was applied for approximately 20 minutes, on the areas which were treated and subsequently a cream containing Gentamicin and Betamethasone was applied every 12 hours for three days.

Three days after the treatment (Figure 1), the



patient showed an evident and effective coagulation of the treated vessels, with the formation of thin scabs in the areas of the larger vessels.

The patient reported not having felt any pain nor any burning sensation after the treatment.

After one month (Figure 2), the result was already evident, so that the second session was limited to very few points. This was essentially not in order to treat any non coagulated vessels, but to remove some pigment residues.

A subsequent check, 30 days later, showed the case had healed completely (Figure 3)

CASE HISTORIES AND CONCLUSIONS

Till date, 24 cases of couperose have been treated with ARC Krypton laser. In 20 cases the patients healed completely after two-three sessions. In three cases there was a remarkable improvement. In only one case (the couperose had arisen due to cortisone treatment at high doses following cerebral edema), the treatment was prolonged for several months (five sessions), before a positive evolution of the picture was pointed out.

Special thanks to Ing. Giannino Algeri, Organization Secretary of I.A.L.T., for his collaboration and willingness shown in checking the indicated physical parameters.

References, from the article on couperose:
1.Nanni C.A., et al. Complications of Cutaneous Laser Surgery. Dermatol. Surg. .1998; 24:209-19
2.Laser Surgery. Dermat. Surg. Special Issue 1998
3.Alster T.S., Lewis A.B. Dermatologic Laser Surgery. Dermat Surg. 1996; 22:797-805

ANNOUNCEMENT

JOINT CONGRESS: 2ND CONGRESS OF THE NORTH AMERICAN ASSOCIATION FOR LASER THERAPY & FIRST CONSENSUS CONFERENCE ON LASER MEDICINE, PHOTOBIOLOGY AND BIOENGINEERING OF TISSUE REPAIR, Washington DC, February 20-23 2002
Website http://www.naalt.org/meetings/index.html

14th EUROPEAN CONGRESS OF RADIOLOGY (ECR 2002), Vienna, Austria, March 1-5 2002
Information: http://www.ecr.org ; E-mail register@cancom.com

ACADEMY OF LASER DENTISTRY'S NINTH ANNUAL CONFERENCE AND EXHIBITION, San Diego, CA, March 12-16 2002
Information: http://www.laserdentistry.org ; E-mail: laserexec@laserdentistry.org

22nd ANNUAL CONFERENCE OF THE AMERICAN SOCIETY FOR LASER MEDICINE AND SURGERY, Atlanta, GA, April 10-14 2002
E-mail: Information@aslms.org ; http://www.aslms.org

4th CONGRESS OF THE WORLD ASSOCIATION FOR LASER THERAPY (WALT), Tokyo, Japan, June 27-30 2002
Information: Prof. Kazuo Hanaoka (Congress Chairman)
E-mail walt2002-regi@congre.co.jp

15th WORLD CONGRESS OF THE INTERNATIONAL SOCIETY FOR LASER SURGERY AND MEDICINE, in conjunction with LASER 2003-World of Photonics and 16th International Conference on Lasers and Electro-optics in Europe
Munich, Germany, June 25-27, 2003
E-mail hofstetter@uro.med.uni-muenchen.de