Short report

CARBON DIOXIDE LASER VAPORIZATION IN TREATMENT OF VERRUCAE VULGARES

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ABSTRACT

In this paper the author presents an effective method of surgical treatment using the carbon dioxide laser for removal of viral induced benign epithelial tumors i.e. warts on surface of the hands. With carbon dioxide laser were treated 30 patients with more than 5 warts or with a single wart larger than 2 cm in diameter, which were on the skin more than six months. Eighty-one percent of the patients required only one laser treatment to complete the eradication of warts. Retreatments during the early postoperative months were necessary in 6 patients.

The carbon dioxide laser vaporization is an excellent method for treating problematic or recurrent warts. The author concludes that carbon dioxide laser treatment is now an important method in the treatment of recurrent, gigantic or widespread warts.

KEY WORDS

warts, carbon dioxide laser vaporization

INTRODUCTION

This is a report on using the carbon dioxide (CO_2) laser for removal of verrucae vulgares. All warty lesions tend to show erratic growth patterns, remaining static for a long period or proliferating with alarming speed. The growth may be generated by altered immune conditions in transplant or lymphoma patients or by intake immunosuppressive drugs.

It is known that about 67% of warts disappear spontaneously (1). A lot of them are unusually extensive or unresponsive to other routine treatments such as cryosurgery, electrosurgery, or local acid application. The CO_2 laser is an efficacious instrument for treating that kind of warts (2).

MATERIALS AND METHODS

Thirty patients were treated for viral warts on surface of the hands by means of CO_2 laser. All patients were selected for this treatment because their warts did not respond well to other routine treatments, they were unusually extensive or they persisted longer than a year on the hand. If there

were more than 5 warts or a wart larger than 2 cm, the author considered them as extensive.

In the treatment of verrucae vulgares we used IRRADIA 315M surgical CO_2 laser, with an invisible beam wavelength of 10.6 nm. The power level was 15 watts in impact spots of 1 mm^2. This produced the power density of 1910 watts/cm^2 that delivered series of pulsed impacts with the shutter operating at either 0.05 or 0.1 sec (2,3). Treatment is carried out under magnified vision in order to see all small satellite warts and to judge more precisely when all wart tissue has been vaporized.

Involved areas of tissue were triple cleansed, with soap and water, a povidon-iodine solution and isotonic saline solution. One-percent lidocaine hydrochloride was injected locally.

The warts were vaporized by moving the laser beam slowly over the surface. The skin was vaporized superficially. There was a difference in the vaporization of normal tissue and warts. Warts vaporize quickly with a char as a resultant on the top of the tissue. The charred tissue was removed using a scalpel blade or by rubbing with a swab moistened with hydrogen peroxide. This process was easily repeated until no visible differences between normal and treated tissue were distinguishable.

Additionally, the wound was dressed twice a day with an antibiotic ointment in order to reduce postoperative inflammation and to decrease scar formation. The patients were checked in the first and second postoperative week, i.e. during the time when active granulation was visible in all patients. Further visits were scheduled at four weeks and three months after the treatment.

RESULTS

In this study there were 30 patients, 19 females and 11 males. The age range was from 19 to 60 years, with a mean age of 40.2 years. In all patients the verrucae vulgares were located on surface of the hands. In four patients there was only one site of involvement but 15 patients had periungual involvement. After laser surgery the verrucae vulgares were eradicated in 81% of the treated patients. Six patients had immediate recurrence of warts and required two additional treatments. Others were free of lesions at 3-month follow-up. These laser treatment failures occurred in immunosuppressed and lymphoma patients.

Some of the treated patients described postoperative discomfort such as mild burning or pain. The intensity of discomfort varied in proportion to the amount of tissue vaporized. Only three patients developed scarring after treatment.

The healing time, which was in correlation to the amount of tissue vaporized, varied from 7 days to 3 weeks. This was the time needed for complete loss of burn eschar.

DISCUSSION

Verrucae vulgares in hands induced by HPV types 1,2,4 and 7 are the most widespread. Previous studies of verrucae vulgares treated with liquid nitrogen, salicylic and lactic acid or other keratolytic agents give a 65% cure rate at 6 months follow-up (4). Even recurrent though published results using electrosurgery on extensive and recurrent warts didn't give a better cure rate at a same time follow-up period (5). The theoretical advantages of using CO_2 laser compared with other electrocautery instruments are based on the principle that infrared waves are readily absorbed by tissue, which has a high water content. The laser beam produces a very narrow line of damage. The electrocautery causes relatively wide zone of tissue damage (6). A reduction of the zone of thermal damage may therefore result in both more rapid healing and less scarring. The continuous wave CO_2 lasers leave the large zone of thermal damage, but suitably short pulses of CO_2 laser radiation can ablate tissue and leave a minimal zone of thermal damage (7,8,9,10).

The results achieved by CO_2 laser vaporization show that 81% of the patients had only one laser treatment and in chosen follow-up period no recurrences. It is very close to the results in E. Burney and D. Rosen laser study. They report about similar laser technique and 81% success rates with one CO_2 laser treatment (11).

T. Muellar reports a 94.7% success rate with one CO_2 laser treatment of plantar verrucae vulgares (11).

There are many advantages to the CO_2 laser. It is relatively powerful instrument, highly precise and effective. But there are a lot of other factors, which influence the success of laser treatment. Some of them are host genetic and immunologic factors, which may play a role in severity of the primary infection and the frequency of recurrent ones.

In this study, a lot of lesions were multifocal. These are often difficult to eradicate and more than one treatment may be required. Multiple laser treatments will lead to the elimination of warts.

Even in the immunosuppressed patient (lymphoma patient), reasonable control of the disease is possible with continued, intermittent laser treatment.

In contrast with other laser studies where postoperative scarring were seen in 50% of treated patients, in this study 10% of treated patients developed scarring (12). Short pulses of CO_2 laser reduce the zone of thermal damage, which result in both more rapid healing and less scarring.

CONCLUSION

The CO_2 laser is an efficacious instrument for treating verrucae vulgares. It should be now considered for extensive and recurrent warts. The most unpleasant aspect of CO_2 laser treatment except discomfort associated with mild pain is that this kind of treatment is much more expensive than others.

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