

ASSESSMENT OF CRYOTHERAPY BY LIQUID NITROGEN IN THE TREATMENT OF HAND AND FEET WARTS

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EVALUATION DE LA CRYOTHÉRAPIE À L'AZOTE LIQUIDE DANS LE TRAITEMENT DES VERRUES DES MAINS ET DES PIEDS

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RÉSUMÉ

Prérequis : La cryothérapie à l'azote liquide (AL) est la méthode la plus utilisée dans le traitement des verrues des mains et pieds. La réponse thérapeutique dépend de plusieurs facteurs liés à la verrue mais aussi au patient.

But : le but de cette étude est de déterminer les facteurs influençant la réponse thérapeutique des verrues à la cryothérapie par AL.

Méthodes : C'est une étude prospective transversale menée au service de Dermatologie de l'hôpital Charles Nicolle de Tunis, incluant 100 patients atteints de verrues des mains et/ou des pieds et traités par la cryothérapie à l'AL (méthode du coton tige). Les caractéristiques démographiques ainsi que celle des verrues ont été recueillies. Les Patients avaient reçu 1 séance/semaine avec un maximum de 4 séances. Les Patients dont les verrues avaient disparu étaient considérés comme guéris. Les facteurs prédictifs de guérison avaient été analysés avec une étude multivariée par régression logistique.

Résultats : Parmi les 100 patients (56 femmes/44 hommes, âge moyen 22 years.), 10 ont été exclus de l'étude. Quatre vingt neuf patients avaient une atteinte des mains, 23 une atteinte des pieds et 12 une atteinte des mains et des pieds. Le nombre moyen de verrues par patient était de 7. Le taux global de guérison était de 64.4% et était plus élevé sur les mains que sur les pieds. (70.8% versus 10.5%). Il n'y avait pas de différence entre l'âge moyen des sujets guéris et celui des non guéris (22.2 ans versus 21 ans). La durée moyenne des verrues chez les guéris était plus courte que celle des non guéris. Le nombre moyen de verrues avant traitement était de 4.3 chez les guéris contre 12.3 chez les non guéris. Le nombre moyen de traitements était de 2.3 chez les guéris contre 4 chez les non guéris. La différence entre ces différents facteurs dans les groupes des guéris et les non guéris était statistiquement significative dans l'étude univariée mais non significative dans l'étude multivariée.

Conclusion : L'efficacité de l'AL appliqué par la méthode traditionnelle dans le traitement des verrues des mains et pieds paraît dépendre de plusieurs facteurs : la durée des verrues, le nombre de verrues et le nombre de traitements. Ces facteurs sont interdépendants.

SUMMARY

Background: Cryotherapy with liquid nitrogen is the most widely used method to treat hand and feet warts. Therapeutic response to this method depends on many factors related to warts and to the patient.

The aim of this study is to determine factors influencing therapeutic response of warts to cryotherapy by liquid nitrogen.

Methods: It was a prospective transversal study including 100 patients with warts of the hands and/ or feet treated by cryotherapy with liquid nitrogen (cotton wool bud) and referred to Dermatology Department of Charles Nicolle Hospital of Tunis. Demographic data, so as characteristics of warts were recorded. Patients received one treatment/week with a maximum of 4 sessions. Patients whose warts were seen to be resolved were classified as cured. Cure-predictive factors were studied with a multi varied study with logistic regression.

Results: Of the 100 patients (56 females/44 males, Mean age: 22 years), ten were withdrawn. In 89 patients, warts were present on hands, whereas 23 had warts on feet and 12 had warts on both hands and feet. The mean number of warts per patient was 7. The total cure rate was of 64.4% and was more elevated in hands compared to feet (70.8% versus 10.5%). There was no difference between mean ages of cured group and not cured one (22.2 years versus 21 years).

The mean duration of warts in cured patients was lower than that of not cured patients. The mean number of warts before treatment was 4.3 in cured patients and 12.3 warts in not cured patients. The mean number of treatments was 2.3 in cured patients and 4 treatments in not cured patients. The difference between these factors into cured and not cured groups was statistically significant in uni-varied study but not significant in multi-varied one.

Conclusion: The effectiveness of liquid nitrogen used by traditional method in the treatment of hand and feet warts seems to depend on multiple factors: wart's duration, number of warts and number of treatments. These factors depend on each other.

MOTS - CLÉS

Cryothérapie - azote liquide - verrues

KEY - WORDS

Cryotherapy - liquid nitrogen - warts

Warts are among the most common skin disorders seen by dermatologists. They affect 10% of population and they may cause physical and emotional discomfort. The current of standard treatment involves primarily physical destruction of the infected cells. Cryotherapy with liquid nitrogen is the most widely used method. Therapeutic response to this method depends on many factors related to warts and their localisations so as to the patient.

The aim of this study is to determine factors influencing therapeutic response of warts to cryotherapy with liquid nitrogen.

PATIENTS AND METHODS

Patients referred to Dermatology Department of Charles Nicolle Hospital of Tunis with warts of the hands and/ or feet were enrolled into a prospective transversal study. We included 100 patients. Demographic data, including age and sex of the patient, duration, site and number of warts were recorded. Liquid nitrogen was applied by the same practitioner for all patients. It was applied with a cotton wool bud. Warts were frozen until ice-ball formation had spread from the centre to include a 2 mm margin around the wart. Patients received 1 session/week with a maximum of 4 sessions. Patients whose warts were seen to be resolved were classified as cured. Patients who did not present at each control were excluded from the study.

Statistic analysis was made using the SPSS version 11.5. Results have been represented with percentages or means.

Cure-predictive factors were analysed. If more than one factor is identified, a multi varied study with logistic regression was completed to determine if this factor is independent.

RESULTS

One hundred patients were recruited (56 females/44 males) and ten of them were withdrawn. The mean age was of 22 years [range: 4-70 years]. The most affected range age was between 10 and 20 years.

In 89 patients, warts were present on hands, whereas 23 had warts on feet and 12 had warts on both hands and feet. The mean number of warts per patient was 7 warts. Hand had the most elevated mean number of warts (6 warts) with predominance in palmer hand (mean: 3 warts). Left hand was more infected than right hand (76% vs 57%). Most patients with hand warts (20%) had only one wart.

Among 90 patients who completed the study, 58 were cured (64.4%). The cure rate in patients with hand wart was more elevated than the foot wart one (70.8% versus 10.5%). Warts affecting both hands and feet were not cured.

We studied some predictive cure factors: age, wart duration, number of treatments and number of warts before treatment. We compared each of factors between group of cured and not cured patients (table 1). There was no difference between mean ages of cured group and not cured one (22.2 years versus 21 years). The mean duration of warts in cured patients was lower than that of not cured patients. The mean number of warts before

treatment was 4.3 in cured patients and 12.3 warts in not cured patients. The mean number of treatments was 2.3 in cured patients and 4 treatments in not cured patients. The difference between these factors into cured and not cured groups was statistically significant in uni-varied study but not in multi-varied study.

DISCUSSION

Warts are particularly frequent in children and teenagers with an increase of frequency between 9 and 15 years. In our study, the most affected age range is between 10 and 20 years. The mean age, so as the equal sex involvement, are comparable with those of many other therapeutic trials (1).

Table 1: Predictive factors of cure

	Cured	Not cured	Univariate study	Multivariate study
Mean duration of warts	55 weeks	76 weeks	p=0.05	
Mean number of warts before treatment	4.3	12.3	p=10-3	Not significant difference
Mean number of treatments	2.3	4	p=10-3	

As demonstrated by the literature, the hand is the most affected localisation by warts (1, 2, 3, 4, 5, 6). In our study left hand is more affected than the right one. This preference has not been previously reported.

According to other studies, the mean number of warts varied from 4 to 11 warts by person with a mean of 6 warts, which is comparable with that of our study (7 warts by person).

Cryotherapy with liquid nitrogen is the most commonly used method. Different techniques have been described and divided into "gentle" or "aggressive" methods. We used the "gentle" above-mentioned method (7). The other techniques are more aggressive with variations in freeze times, modality of application (cryospray versus cotton wool bud, parage of viral tissue before cryotherapy), number of applications (second freeze versus single freeze) and intervals between treatments (one, two, three or four weeks) (8,9). In our study, we used an interval of one week between treatments. It was reported that cure rate of hand is more elevated than that of foot (2, 5). This result has been confirmed in our study. Cure rates of multiple studies using the gentle method and the same number of treatments (four treatments), range from 26 to 69%. Our cure rate is situated in this range (64.4%). This variability can be explained by the different individual susceptibility to the liquid nitrogen. Pooling of data showed that aggressive cryotherapy is significantly more effective but it can lead to more side effects like blistering and pain. More than one study found that cure rate is independent of the interval between treatments but it

depends on number of treatment (7, 3). A short interval (one week) may cause more side effects. With a three weeks interval the duration of cure is longer. So we think that an interval of two weeks is the most optimum.

In uni-varied study, we found that cure rate depends on multiple factors: number of warts before treatment, duration of wart and number of treatments. But, these factors were not statistically significant in multivaried study. They are not independent from each other and may together influence the cure delay with cryotherapy. So, when we treat hand and feet warts, an interval of 2 weeks can be proposed for patients. These should be informed, especially when they have a great number of warts, evolving for a long period, that they have to receive multiple sessions of cryotherapy, generally more than 4 sessions.

Warts are particularly frequent in children. They cause a considerable discomfort. Right now there is no successful treatment giving complete clearance. The effectiveness of liquid nitrogen used by traditional method seems to depend on multiple factors: wart's duration, number of warts and number of treatments. But, these factors depend on each other.

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