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Zastosowanie prądów impulsowych wysokiej częstotliwości w leczeniu odleżyn

(Z Kliniki i Katedry Rehabilitacji w Warszawie-Konstancin; kierownik: prof. dr med. M. Weiss)

Pulsed High Frequency Currents (Diapulse) Applied in Treatment of Bed-Sores

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Electromagnetic energy has been used as a therapeutic modality for many years. Until now, the devices employed supplied high frequency energy in continuous waves (CW), sometimes causing overheating of irradiated tissues. This is not indicated, and can be harmful in many cases.

Clinical and experimental studies conducted recently show that many effects of high frequency energy are caused by electromagnetic phenomena (1,2). With regard to the above, a new apparatus, Diapulse, has been constructed, which generates high level energy impulses, separated by intervals, that allow the heat effect to dissipate.

This new form of treatment, pulsed high frequency energy, allows an appreciable extension of the range of shortwave application.

Experimental and clinical tests (3-12) indicate significant efficacy of electromagnetic impulses in healing processes of tissues. It was decided to evaluate the influence of treatment by Diapulse on healing bed-sores.

During the period 1975-1976 in the Rehabilitation Department of the Medical Academy in Konstanci, 27 patients suffering from spinal cord injuries complicated by bed-sores, have been treated with Diapulse.

Material and Methods

27 patients, 6 women and 21 men, ages from 20 to 63, were treated. In this group, 13 patients suffered injuries in the cervical, 11 in the thoracic, and 3 in the lumbar area of the spine.

23 patients suffered complete sensorimotor paralysis from the level of the lesion, and the remaining 3 patients had partial paraplegia.

Treatment with Diapulse consisted of applying the treatment drum over the bed-sores at settings of 600 impulses and 6 penetration, for a period of 20 minutes; and with 400 impulses and 4 penetration for 15 minutes each, over the suprarenal and liver.

23 patients underwent treatment once in 24 hours, and 4 patients twice in 24 hours. Simultaneously with Diapulse treatment, we applied routine dressings containing agents stimulating granulation and epithelialization.

Diapulse treatment was continued until final healing of the sores and their post surgical management. This program was continued until patient was ready to leave for home. Depending on the

magnitude of bed-sores, this period of healing varied from 10 days to 6 months.

Before Diapulse treatment was commenced, all bed-sores were photographed and measured in centimeters. Results obtained from the treatment were documented by photographs.

Results of Treatment

Much better results were obtained with pulsed high frequency energy in cases of superficial bed-sores in comparison with those with deep necrosis.

This relation is presented on Table 1

Table 1

| Type of Bed-sore | Number of Patients | EFFECTS OF TREATMENT | | | |
|------------------|--------------------|----------------------|--------------|----------|------|
| | | Degree of Healing | | | |
| | | Complete | Considerable | Moderate | Null |
| Deep | 15 | 4 | 6 | 5 | 0 |
| Superficial | 12 | 11 | 1 | 0 | 0 |
| Totals | 27 | 15 | 7 | 5 | 0 |

As shown in Table 1 above, under Diapulse treatment, superficial bed-sores completely healed in 11 of 12 cases, while deep sores were healed in only 4 of 15 cases. The remaining 11 cases showed considerable or moderate improvement. In no case was there a lack of improvement.

Attaining marked improvement required considerably shorter time with Diapulse treatment of superficial bed-sores than deep ones. In cases of superficial bed-sores, 11 of the cases healed in a period of up to 4 weeks from commencement of the pulsed electromagnetic energy application.

It has been observed that using Diapulse treatment immediately after bed-sores form, leads to faster complete healing. On the other hand, postponing such treatment for more than 3 months after the original bed-sores appear, gives lesser effects, and treatment must be maintained for longer periods of time. See Table 2.

Table 2

| Time lapsed from forming of bed-sores to commencement of Diapulse Treatment | Number of Patients | EFFECTS OF TREATMENT | | | |
|---|--------------------|----------------------|--------------|----------|------|
| | | Degree of Healing | | | |
| | | Complete | Considerable | Moderate | Null |
| Immediately | 7 | 7 | 0 | 0 | 0 |
| Up to 3 mos. | 6 | 3 | 1 | 2 | 0 |
| Up to 1 yr. | 9 | 2 | 5 | 2 | 0 |
| After 1 yr. | 5 | 3 | 1 | 1 | 0 |
| Totals | 27 | 15 | 7 | 5 | 0 |

Even after a very long period of treatment with pulsed high frequency electromagnetic energy, no detrimental effects have been observed in blood tests and in basic functions of internal organs of the patients.

Conclusion

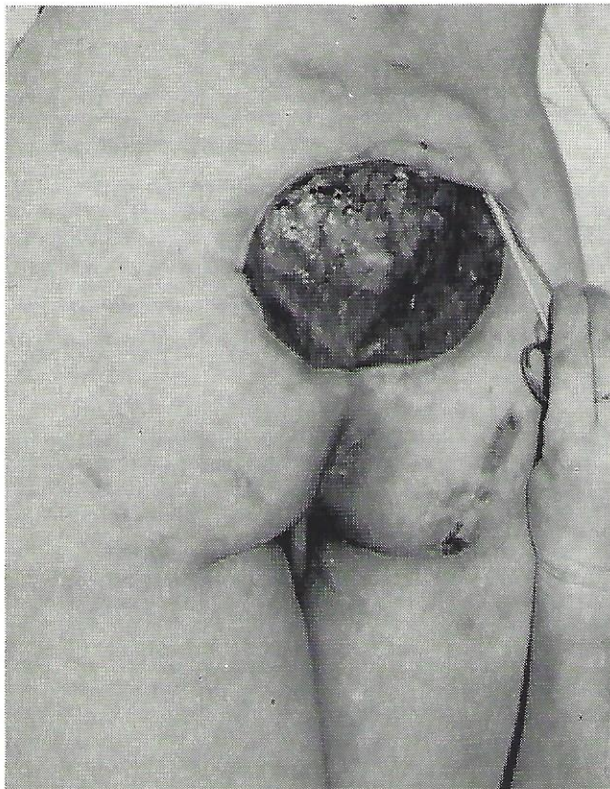
1. Pulsed high frequency electromagnetic energy therapy indicates positive influence in healing of bed-sores, in the sense that healing is accelerated in comparison with other conventional methods.

2. Effects of treatment with Diapulse are much better when commenced early.

3. Early observation found no side effects of Diapulse treatment on the patients.

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1 A. Patient D.J., 21 years old. Bed-sore in area of sacrum.



1 B. Same patient, 6 months after treatment with pulsed electromagnetic energy (Diapulse).