# CREATINE EXCRETION IN DIABETES MELLITUS

W. M. POLITZER AND T. SCHNEIDER

*South African Institute for Medical Research and the General Hospital, Johannesburg*

Dupuytren's contracture is a common condition in diabetes mellitus. One of the authors has described 120 of these cases among 381 diabetics in the older age-group.[1]

Steinberg[2] has stated that in Dupuytren's contracture the creatine excretion in the urine is increased and suggests that both in this condition and in fibrositis there is an abnormality in tissue metabolism. He found that the total amount of creatine excreted per 24 hours in cases of primary fibrositis was 264-918 mg. (in this group he included Dupuytren's contracture). In 12 out of 15 cases it was over 300 mg. per 24 hours.

In view of this suggestion and the frequency of Dupuytren's contracture in diabetes, it was decided to investigate the creatine excretion in a series of diabetic patients.

*Method*

The investigation comprised 74 adult European patients (50 females and 24 males) attending the Diabetic Clinic of the Johannesburg General Hospital, of whom 39 (29 females and 10 males) had Dupuytren's contracture. Their ages varied from 45 to 83 years (average 62½ years). A control group of 50 patients of a similar average age and not suffering from either diabetes or Dupuytren's contracture or any other condition known to affect creatine metabolism were similarly investigated.

The total creatine was determined on 24-hour specimens of urine collected from each patient. The method used was that of Peters and Van Slyke.[3] As shown in Table I the total diabetic group revealed a significant increase in creatine excretion; those with Dupuytren's contracture also showed a similar increase. In the control group only one female exhibited a 24-hour creatine excretion of over 300 mg. whilst in the diabetic groups 2 males and 11 females had this high excretion rate. Of the latter 2 males and 3 females showed Dupuytren's contracture.

TABLE I. CREATINE EXCRETION IN MG. PER 24 HOURS

| | *Females* | *Males* |
|---|---|---|
| Diabetic group .. .. .. | 185(18-858) | 164(20-782) |
| Diabetics with Dupuytren's contracture .. .. .. .. | 164(14-858) | 278(47-782) |
| Controls .. .. .. .. | 99(20-420) | 87(18-213) |

## DISCUSSION

It is well known that in conditions with muscle degeneration or destruction an increase in creatine excretion occurs.[4] Thus, in muscular dystrophy some of the highest creatine excretion figures are obtained. Steinberg has drawn attention to the fact that in primary fibrositis a marked creatinuria occurs; and having placed Dupuytren's contracture in the same group of cases he infers that here too creatine values in the urine are increased.

While this may be true in non-diabetic subjects it is interesting to note that our own figures among female diabetics reveal no significant difference between the group with and the group without Dupuytren's contracture. On the other hand, amongst our male diabetics with Dupuytren's contracture there is a marked rise in the creatine excretion compared with the total diabetic group and the control group. While the group is small in numbers some significance must be attached to the differences noted.

The main observation which emerges from this investigation is that creatinuria was found to be very common in the diabetic population examined. Of 74 patients 13 (18%) had a creatinuria of over 300 mg. per day compared with the control group with 1 out of 50 (2%). It would therefore appear that creatinuria is related to the diabetic state. Age itself is not of any significance as demonstrated by the control group. Neither does Dupuytren's contracture in the diabetic female appear to influence creatinuria unduly. In the male, however, figures of 782, 736, 260, 246, 228, 135, 135, 120, 86 and 47 mg. were obtained. In view of the fact that creatine excretion in the healthy male occurs irregularly and is usually only half or less than half that in the female some significance must be attached to the figures obtained. The possibility therefore that this may be related to Dupuytren's contracture as suggested by Steinberg cannot be excluded; a large series of cases would have to be analysed before a definite opinion could be given.

It has been suggested in the past that diabetes causes creatinuria through the break-down of muscle tissue[4] following upon impaired utilization of glucose. No direct relationship was found between the degree of stabilization of diabetes and the amount of creatine excreted in the urine; for instance patient G.M.S., who was under good diabetic control, had a creatine excretion of 858 mg. whilst Sister G., a poorly controlled, brittle diabetic, had a creatine excretion of 58 mg. per 24 hours. Neither was the creatine excretion in the urine influenced by the duration of diabetes. Thus B.S., a diabetic of 18 years' standing, had a creatinuria of 18 mg. per 24 hours, while after 3 years G.M.S. excreted 858 mg. creatine.

Our observations therefore lead us to believe that in the older age-groups of diabetics creatinuria is common, both in those with and without Dupuytren's contracture. The latter condition was not found to influence the creatinuria to any extent in the female cases examined although in the male group there was evidence to suggest that Steinberg's contention of the association of Dupuytren's contracture with creatinuria might be supported.

SUMMARY

1. Creatine excretion was determined in a group of 74 European diabetics (50 females and 24 males) and 50 control cases.

2. Thirty-nine diabetics (29 females and 10 males) had Dupuytren's contracture.

3. Creatinuria was greater in the diabetic group.

4. There was no significant difference between the creatinuria in the female total diabetic group and in those with diabetes plus Dupuytren's contracture, but there was a marked difference between the males of the two groups.

5. The significance of the results is discussed.

We wish to thank Mr. V. J. Noble for his technical assistance.

REFERENCES

1. Schneider, T. (1953): S. Afr. Med. J., **27,** 466.
2. Steinberg, C. Le R. (1946): Med. Clin. N. Amer., **30,** 221.
3. Peters, P. and Van Slyke, D. (1932): *Quantitative Clinical Chemistry*, vol. 2, p. 602. London: Baillière, Tindall and Cox.
4. Wright, S. (1952): *Applied Physiology*, p. 894. London: Oxford University Press.

## ASSOCIATION NEWS: VERENIGINGNUUS

## MEDIESE BESKERMING

Op die jongste vergadering van die Federale Raad is dit ooreengekom dat die Mediese Vereniging van Suid-Afrika 'n ooreenkoms met die Medical Protection Society van Londen sou sluit, waardeur die Genootskap 'n Suid-Afrikaanse Tak in oorleg met die Vereniging sou stig.

Vir baie jare is beskerming aan ons lede verskaf volgens 'n ooreenkoms met die Atlas Assuransie Maatskappy, wat waardevolle diens aan die mediese professie in ons land gelewer het deur die dekking wat hulle voorsien. Hegte vriendskapsbande het bestaan, en bestaan nog tussen die maatskappy en die Vereniging, en die ooreenkoms wat nou met die Medical Protection Society aangegaan is, verskaf 'n alternatiewe diens aan lede maar vervang nie die diens wat die Atlas Maatskappy gedurende al hierdie jare voorsien het nie.

'n Memorandum wat die dienste van die Medical Protection Society duidelik maak, is vir oorweging aan al die lede van die Vereniging gepos, en dit word aan die lid oorgelaat om te besluit watter vorm van beskerming hy verkies. Een ding staan egter vas, naamlik dat elke dokter op een of ander wyse beskerm moet wees. Versuim om hierdie voorsiening te tref, asook nalatigheid om toe te sien dat die beskerming, met betrekking tot die bedrag van indemniteit, doeltreffend is, is dwaasheid.

Dit is gevind dat die vorige laer perk van £1,000 nie meer redelike en genoegsame beskerming bied nie, en dit is nou tot £2,000 verhoog. Sommige soorte van praktyke het beskerming teen baie groter eise nodig.

Die vorms wat gesirkuleer is, sluit 'n aansoekvorm in, en die aanvangsdatum vir dekking deur die Medical Protection Society dateer van die datum waarop die voltooide vorm by die kantoor van die Sekretaris van die Mediese Vereniging van Suid-Afrika, Posbus 643, Kaapstad, ontvang word. Lede wat miskien besluit om die beskerming wat hulle by een of ander maatskappy of genootskap het, te verander, moet aandui wanneer die volgende hernuwingspremie normaalweg betaalbaar is.

## NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

*Ef-Cortelan Nasal Spray.* This product is an isotonic aqueous solution containing: Hydrocortisone (alcohol) 0·02%, naphazoline nitrate 0·025%.

Hydrocortisone has been shown to be effective for the relief of inflammatory conditions of the nasal passages when applied to the mucous membranes of the nose in very dilute solutions. Local application avoids the possibility of systemic effects and the low concentration is unlikely to cause irritation. The presence of naphazoline, a decongestant vasoconstrictor, assists the hydrocortisone to exert a maximum effect.

Ef-Cortelan Nasal Spray is recommended for the commonly occurring inflammatory allergic conditions of the nose, such as hay-fever and vasomotor rhinitis. It is also effective in reducing the inflammation in sinusitis and helps to prevent the recurrence of nasal polypi.

The length of treatment varies with the condition and the response obtained, but unnecessarily prolonged treatment should be discouraged. Where acute infection is present this may require appropriate treatment concurrently.

Manufactured by Glaxo Laboratories (S.A.) (Pty.) Ltd., P.O. Box 21, Wadeville, Transvaal. Packed in 15 c.c. plastic squeeze-bottles.

* * *

*Neobacrin Ointment.* This product contains 5 mg. of neomycin sulphate and 500 units of zinc bacitracin per gram, in a bland paraffin base. Both these antibiotics are bactericidal. They are non-irritant and have an extremely low sensitizing potential. No systemic effects from Neobacrin have been observed, even when applied to large body-surfaces for prolonged periods.

Neobacrin is recommended for the treatment of pyogenic skin conditions such as impetigo, sycosis barbae, furunculosis, and secondarily infected wounds and burns. Superficial infections of the eye such as blepharitis, conjunctivitis and styes also respond well to Neobacrin.

Manufactured by Glaxo Laboratories (S.A.) (Pty.) Ltd., P.O. Box Wadeville, Transvaal. Packed in 3·5 gram long-nozzle tubes.

## REVIEWS OF BOOKS : BOEKRESENSIES

AIDS TO DISPENSING

*Aids to Dispensing.* Fifth Edition. Revised by G. M. Watson, B.Pharm., F.P.S. Pp. vii + 167, with 7 Illustrations. 7s. 6d. net. London: Baillière, Tindall and Cox Ltd. 1956.

*Contents:* Preface. I. Introduction. II. Powders. III. Cachets and Capsules. IV. Percentage Solutions. V. Mixtures. VI. Emulsions. VII. Incompatibles. VIII. Pills. IX. Pill Coating. X. Tablets. XI. Pastilles and Lozenges. XII. Effervescing Granules. XIII. Lotions. XIV. Other External Applications. XV. Preparations for use in the Eyes. XVI. Ointments. XVII. Suppositories. XVIII. Preparation of Isotonic Solutions. XIX. Preparation of Sterile Products. XXI Antibiotics. Index.

The 'Aids' series has always been popular with students and 'Aids to Dispensing' has now reached its 5th edition, having first appeared in 1928. Pharmaceutical practice, like all forms of practice, has changed considerably since those days and in his revision the author has sought to bring the book completely up to date in regard to both knowledge and methods. Certain