

*Letter to the Editor*

**No evidence for increased variation in first phase insulin response to intravenous glucose**

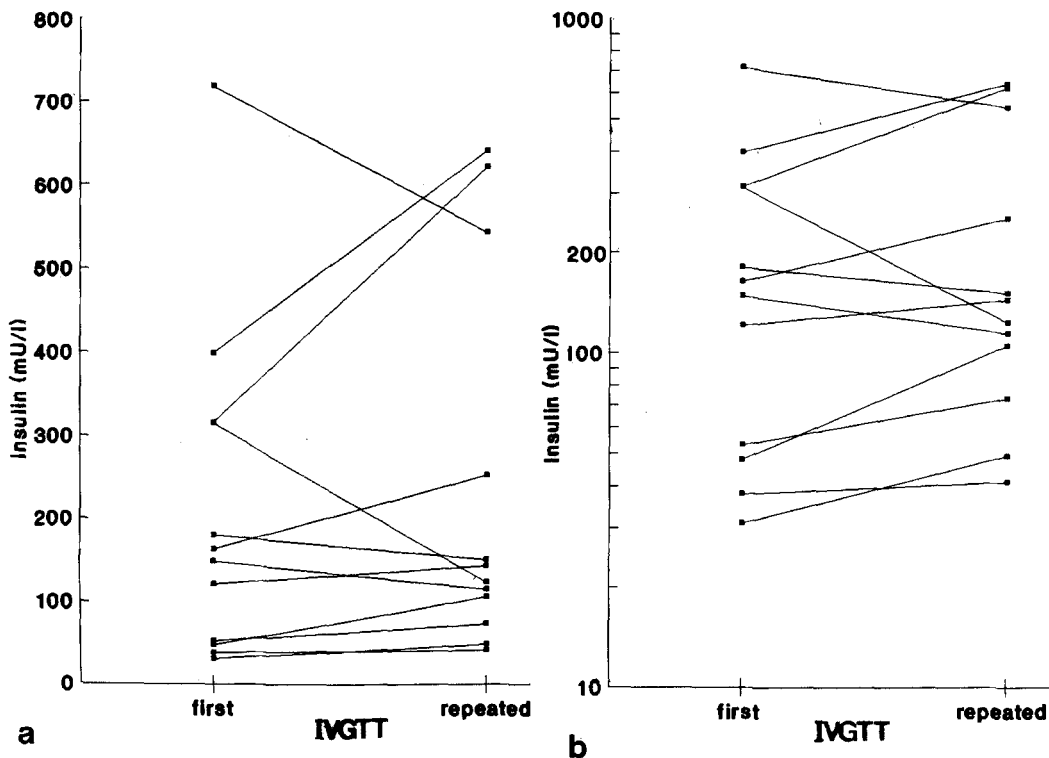
Dear Sir,

First phase insulin response to intravenous glucose is known to be the earliest metabolic change in subjects who later develop Type 1 (insulin-dependent) diabetes [1]. In a recent issue of *Diabetologia*, Smith et al. [2] reported a high variation between and within subjects while using this test. The authors conclude that this variability "severely limits the value as early predictor of B-cell failure". In our opinion the data presented are not sufficient to support this view.

A high variation of first phase insulin response *between* subjects cannot be used as an argument against the reliability of a physiologi-

cal parameter. The list of physiological parameters with a broad normal range is long.

Additionally, analysis of variation within subjects should be done according to the natural distribution of insulin response to intravenous glucose. We recently performed an IVGTT in 100 normal subjects [3] to establish normal values for our Düsseldorf-Essen family study [4] and observed that the distribution of serum insulin levels (calculated as one plus three minutes insulin levels) is not Gaussian but lognormal. We repeated the test in twelve volunteers ten to fourteen months after the first examination. Variability of intraindividual results was seemingly higher in four cases when studying absolute values (Fig. 1a) but was more uniform and lower after logarithmic scaling of the ordinate (Fig. 1b). After conversion of log insulin concentration into percentiles of a normal population it appeared that the mean variation between first and second IVGTT was  $12 \pm 11$  percentiles (range 1-36 percentiles). We conclude that:



**Fig. 1.** Reproducibility of first phase insulin response to intravenous glucose in 12 healthy volunteers (expressed as sum of serum insulin levels 1 plus 3 min after infusion of 0.5 g glucose/kg bodyweight). **a** Linear scaling of serum insulin levels, **b** Logarithmic scaling of serum insulin levels

1. Analysis of first phase insulin response to intravenous glucose should be done according to the lognormal distribution of this biological parameter (as illustrated in Fig. 1 b). To us and others (1,5) the most appropriate way of analysing insulin response is to express individual data as percentile in a normal (matched) population.

2. The value of insulin response to intravenous glucose as an early predictor of B-cell failure should be studied in subjects showing low insulin secretion, since only a high variation in this range would result in a limitation of the test.

Yours sincerely,

B. Kuglin, A. Hübinger, F.A. Gries, H. Kolb and J. Bertrams

## References

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2. Smith CP, Tarn AC, Thomas JM, Overkamp D, Corakci A,

Savage MO, Gale EAM (1988) Between and within subject variation of the first phase insulin response to intravenous glucose. *Diabetologia* 31: 123-125

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4. Kuglin B, Schwab U, Hübinger A, Kolb H, Bertrams J (1988) Analyse der intravenösen Glukosetoleranz bei 100 jungen Erwachsenen: Unabhängigkeit der frühen Insulinsekretion von Geschlecht und HLA-DR-Type (Abstract). *Akt Endokrin Stoffw* 9: 99-100
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## Announcements

**Moderne klinische Diabetologie. III. Internationaler Weiterbildungskurs für Fortgeschrittene** (under the auspices of the European Association for the Study of Diabetes, under der Schirmherrschaft der Deutschen Diabetes-Gesellschaft)

**In deutscher Sprache.** (Leiter: Prof. Dr. med. Michael Berger, Universität Düsseldorf) WHO Collaborating Center for Diabetes. Vorträge, Gruppenarbeit, praktische Übungen mit internationalen Experten. Begrenzte Teilnehmerzahl. Teilnehmergebühr (inkl. Unterkunft und Verpflegung) DM 450.00. Ort: Gut Höhne bei Düsseldorf. Zeit: 5.1.1989, 15.00 Uhr, bis 8.1.1989, 13.00 Uhr. Anmeldung bis: 15.11.1988, schriftlich an das Sekretariat Prof. Dr. M. Berger, Abt. Stoffwechsel und Ernährung, Medizinische Klinik der Universität Düsseldorf, Moorenstraße 5, D-4000 Düsseldorf 1.

### 1st International Symposium Immunotherapy of Type 1 Diabetes.

This Symposium will be held in Rome from 6-8 April 1989. The symposium is the official meeting of the International Diabetes Immunotherapy Group (IDIG) and will deal with all aspects concerning strategies in the immunotherapy and prevention of Type 1 diabetes. *Deadline for Abstract submission:* 31 December 1988. *For further information and abstract forms contact:* Dr. Paolo Pozzilli, PO Box 680, I-00187 Rome, Italy. Tel.: 39-6-8831139/8831141/4951796/4953624.

### Annual Meeting of the Artificial Insulin Delivery Systems, Pancreas and Islet Transplantation - Study Group of the European Association for the Study of Diabetes.

The Meeting will be held in IGIS from 29-31 January 1989. *Main topics:* insulin therapy in Type I and II diabetes; segmental pancreas transplantation and islet transplantation; implantable devices; immunosuppression; bioartificial pancreas. *Deadline for abstract presentation:* November 15, 1988. *For further information please contact:* Dr. Piero Micossi, Ospedale San Raffaele, Via Olgettina 60, I-20132 Milano, Italy. Tel.: 2170-2758, 2759

### Important Notice

As of the 1st of October, 1988, all NEW manuscripts should be sent to the attention of:

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