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317 IODINE AND THYROID HORMONE EXCRETION INTO URINE IN OBESE PATIENTS DIMINISHED BY TOTAL FASTING. J.Habermann, C.R.Pickardt and P.C.Scriba. Medizinische Klinik Innenstadt, Universitaet Muenchen, FRG.

The decrease of thyroxine binding globulin (TBG) levels in serum during total fasting was documented earlier (1). In addition, a decrease of triiodothyronine (T_3) but an increase of reverse T_3 (rT_3) and free fatty acids in serum was shown (1) in 16 hospitalized obese patients (8 male, 8 female) in the age of 15 to 46 (mean 27) years. In this study, the influence of total fasting over a period of 31.3 ± 9 days (mean \pm SD) on urinary iodine and thyroid hormone excretion was investigated.

Methods: Chemical iodine determination was performed by the Sandell-Kolthoff reaction using a modified autoanalyzer technique (Fa. Technicon, Frankfurt a.M.) for $PB^{127}I$ determination. A Sephadex column technique was used for the radioimmunological measurement of T_4 and T_3 in urine as described previously (2). For statistical calculations the paired t-test was used.

Results: Before fasting the excretion of both thyroid hormones was diminished in these obese patients as compared to the normales in our region (T_4 : 0.45 ± 0.21 $\mu\text{g/d}$ vs. 1.44 ± 0.51 , $p < 0.001$; T_3 : 0.83 ± 0.37 vs. 1.70 ± 0.40 $\mu\text{g/d}$). - The T_4 excretion showed a slight increase during total fasting up to 0.72 ± 0.52 $\mu\text{g/d}$ (n.s.) at the 32nd day of starvation. In contrast the T_3 excretion was found to be reduced to 0.60 ± 0.36 $\mu\text{g/d}$ ($p < 0.025$) at the end of the fasting period. The essential decrease, i.e. to 0.56 ± 0.31 $\mu\text{g/d}$, occurred during the initial 5 days, resulting in a reduction of the T_3/T_4 ratio by 49 %.

Before fasting the iodine excretion in obese patients was found to be in the range of controls in this endemic iodine deficiency area (42.7 ± 12.3 $\mu\text{g/d}$). The excretion decreased rapidly to 23.7 ± 10.1 $\mu\text{g/d}$ ($p < 0.01$) during the initial 5 days of total fasting, but decreased thereafter only slightly to 18 ± 10 $\mu\text{g/d}$ at the end of the fasting period.

Conclusions: 1) Surprisingly, the thyroid hormone excretion seems to be diminished in obese patients before fasting. 2) The decrease of the T_3 excretion induced by fasting was in parallel to the fall of serum T_3 levels. 3) The iodine excretion was impaired promptly during the first 5 days of total fasting, whereas the TSH levels did not rise (1). Thereafter, the iodine excretion remained constant at levels higher than observed in chronic severe iodine deficiency. These findings may indicate a failure of the thyroid gland to adapt to this transient total iodine restriction by increment of the thyroidal iodide clearance.

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1) Scriba P.C. et al.: Acta endocr. (Kbh.) Suppl. 212 (1977) 85

2) Habermann J. et al.: J.Clin.Chem.Clin.Biochem. 14 (1976) 595