

acta
endocrino
logica

Advance Abstracts of Short Papers

25. Symposium Deutsche Gesellschaft für Endokrinologie
Berlin, March 4-7, 1981

Supplementum 240
Copenhagen 1981

Executive Board 1980/81

President	<i>H. Helge, Berlin</i>
Vice-President	<i>J. Hammerstein, Berlin</i>
Congress President 1982	<i>F. Neumann, Berlin</i>
Secretary	<i>W. Staib, Düsseldorf</i>
Board members at large	<i>G. Dhom, Homburg/Saar E. Nieschlag, Münster K. von Werder, München</i>
Mailing address of the Society	D-4000 Düsseldorf Moorenstraße 5 Institut für Physiologische Chemie II der Universität

ABSTRACTS OF SHORT PAPERS
 (* denotes poster presentation)

Page

Thyroid Gland

1. *T. Kaminski, R. Ködding, R. D. Hesch*: Competitive product inhibition of thyroxine 5-deiodinase. 1
2. *M. Auf'mkolk, J. Köhrle, T. Kaminski, E. C. Jorgensen*: Flavonoids and plant pigments inhibit iodothyronine deiodinases 2
3. *R. Ködding, H. Fuhrmann, A. von zur Mühlen*: Monodeiodination of iodothyronines in the cerebral cortex 3
4. *D. Mosny, E. Heinen, J. Herrmann, D. Hafner*: The influence of streptozotocin-induced diabetes mellitus on the conversion of T₄ to T₃ in rat liver microsomal fraction. 4
5. *U. Loos, R. Grau, L. Duntas, F. S. Keck, E. F. Pfeiffer*: Alterations of thyroid hormone serum concentrations in diabetic coma and in patients with insulinoma under the influence of somatostatin. 5
6. *N. Stahnke, K. Mertens, I. Lagenstein*: Thyroid function in patients under anti-convulsant therapy. 5
7. *R. Grün, A. Scheuer, K. Ehlenz, M. Grün*: The influence of the portocaval shunt on the thyroid hormones of the rat 6
8. *K. von Reuss, O. H. Wieland*: Thyroglobulin estimation for differentiation of hypothyroidism in neonatal thyroid screening 7
9. *M. Klett, R. Bohnert, D. Schönberg, L. Wille*: Thyroid function in newborns suffering from severe neonatal diseases 8
10. *D. van Thiel, W. Wächter, E. Triebel, J. Habermann, I. Marschner, P. C. Scriba*: Assessment of the efficacy of iodine supplementation by TSH determination in Tanzania 9
11. *P. Stubbe, P. Heidemann, H. Hinrichs, P. Schürnbrand*: The incidence of endemic goiter in boys from an iodine-deficient area in West Germany 10
12. *E. Mäser, J. Teuber, K. Helmke, K. Federlin*: Influence of thyrostatic drugs on the immune response in Graves' disease 11
13. *G. Stöckle, F. J. Seif*: Thyroid-stimulating immunoglobulins in Graves'-Basedow disease before and after treatment with carbimazole 12
14. *M. Hüfner, B. Kimmig*: Time course studies of plasma thyroglobulin in metastatic differentiated thyroid carcinoma 13
15. *H. Schatz, O. Schröder, S. Grebe*: Thyroglobulin levels in sera of patients with differentiated thyroid carcinoma. Longitudinal and cross-sectional studies 14
16. *J. Köhrle, M. Auf'mkolk, H. Winterhoff, H. Sourgens, H. G. Gumbinger*: Iodothyronine deiodinases: inhibition by plant extracts *). 15
17. *M. Grussendorf, M. Ntokalou*: Pathways of the in vitro deiodination of L- and D-thyroxine in rat liver homogenate *) 16
18. *E. Heinen, J. Herrmann, H. L. Kruskemper*: Influence of old age on serum and liver thyroid hormone concentrations in the rat *). 17
19. *C. C. Wong, K.-D. Döhler*: Diurnal changes of serum TSH levels in male rats. Influence of age, strain and season *). 18
20. *M. J. Müller, H. Köster, H. J. Seitz*: Effect of different thyroid states on hepatic ketogenesis *). 19
21. *J. Habermann, B. Leisner, C. R. Pickardt, A. Witte, P. C. Scriba*: Influence of acute incorporation on thyroid function and thyroidal iodine content *) 20

	Page
22. <i>H. Sourgens, F. H. Kemper</i> : Antithyroidal properties of <i>Lithospermum</i> off. and related plants *)	22
23. <i>P. Bratusch-Marrain, H. Vierhapper, B. Grubeck-Loebenstein, W. Waldhäusl, G. Kleinberger</i> : Pituitary-thyroid dysfunction in severe nonthyroidal disease: "low-T ₄ -syndrome" *)	22
24. <i>V. Büber, D. Kraft</i> : Free thyroxine levels and thyroid function in patients undergoing chronic hemodialysis *)	23
25. <i>O. A. Müller, W. Igl, B. Leisner, C. R. Pickardt</i> : Autonomous thyroid adenoma with immunological signs of Graves' disease *)	24
26. <i>J. Teuber, K. Helmke, E. Mäser, S. F. Grebe, K. Federlin</i> : Evidence of endogenic antibodies against thyroid hormones and their clinical relevance *)	25

Parathyroid Gland, Vitamin D Hormone, Calcitonin

27. <i>K. Klaushofer, H. Hörandner, K. Koller, H. Schindler, R. Roka, B. Niederle</i> : Ultrastructure of normal and hyperplastic parathyroid glands and parathyroid adenoma from hyperparathyroid patients after treatment with cimetidine.	26
28. <i>M. Dietel, E. Altenähr</i> : Distribution of PTH in normal and pathological parathyroid glands. An immunohistochemical study	27
29. <i>A. H. J. Schröder, E. Altenähr, M. Dietel, G. Dorn</i> : No acute effect of growth hormone on parathyroid hormone secretion in organ culture	28
30. <i>J. P. Nordmeyer, E. Hassenstein, K. Schulz</i> : Early and late effects on parathyroid gland function in man after irradiation of the neck	30
31. <i>W. Born, M. A. Dambacher, F. Paillard, A. Meyrier, R. Ardailou, J. A. Fischer</i> : Effects of calcium on distribution of parathyroid hormone forms in venous effluent of autotransplanted parathyroid tissue before and after renal transplantations	31
32. <i>J. Bommer, E. Ritz, B. Krempien</i> : Influence of endogenous PTH secretion on growth processes	31
33. <i>P. O. Schwille, D. Scholz, W. Engelhardt</i> : Parameters of parathyroid gland activity in subgroups of calcium urolithiasis	32
34. <i>A. J. Olah, H. A. Jahn, M. A. Dambacher, F. W. Reutter, J. Rosenfeld, J. Guncaga</i> : Effects of 1,25-dihydroxycholecalciferol (1,25-DHCC) on bone mineralization in chronic renal failure	34
35. <i>H. U. Tietze, A. Burgert, A. Schaaff, U. Hennes</i> : Familial rickets with alopecia: inborn end organ unresponsiveness to 1,25-(OH) ₂ D ₃	35
36. <i>E. Keck, H. Peerenboom, H.-J. Graf, H. von Lilienfeld-Toal, H. L. Krüskemper</i> : Vitamin D metabolites in hyperthyroidism	36
37. <i>D. Scholz, B. Husemann, P. O. Schwille</i> : Mineral metabolism and jejuno-ileal bypass surgery for treatment of morbid obesity.	37
38. <i>K. Kruse, U. Kracht</i> : Inhibition of calcitonin secretion/synthesis by anticonvulsant drugs	38
39. <i>F. Raue, J. Gottswinter, S. Korth-Schütz, R. Ziegler</i> : Effect of pentagastrin-stimulated calcitonin release on prolactin secretion in man	39
40. <i>R. Windeck, Z. Vrettos, H. Wevers, D. Reinwein</i> : Secretin stimulates insulin release in patients with primary hyperparathyroidism	40
41. <i>W. Engelhardt, A. Geus</i> : Influence of thyroidectomy and parathyroidectomy on magnesium absorption in rats	41
42. <i>W. Hitzler, H. Schmidt-Gayk, F. Raue, P. Spiropoulos, M. Hüfner</i> : Homologous radioimmunoassay for human parathyroid hormone (53-84) *)	42
43. <i>M. J. Atkinson, B. Niepel, H. Jüppner, M. Casaretto, H. Zahn, R. Hehrmann</i> : Radioimmunoassay of human parathyrin using a synthetic hormone fragment, hPTH (44-68) *)	42

44. *E. Mayer, H. Schmidt-Gayk, R. Gartner, R. Knuppen*: Simultaneous assay of 25-OH-vitamin D₂ (25-OH-D₂) and 25-OH-vitamin D₃ (25-OH-D₃) by HPLC *) 43
45. *J. Bommer, B. Krempien, E. Ritz*: Influence of thyroxine and parathyroid hormone on growth and modelling of tubular bone *) 44

Neuroendocrinology

46. *H. L. Fehm, B. Rockstroh, G. Fehm-Wolfsdorf, K. H. Voigt, N. Birbaumer*: Effects of an ACTH 4-9 analog on event-related brain potentials in man 45
47. *Th. Bruhn, N. Parvizi, F. Ellendorff*: Ability of the fetal hypothalamus to alter LH-secretion in response to electrical and electrochemical stimulation 46
48. *W. O. Richter, P. Schwandt*: Preparation of highly purified human neurophysins 46
49. *R. Martin, K. H. Voigt*: Coexistence of enkephalins with oxytocin and vasopressin in nerves of the rat neurohypophysis 47
50. *F. Ellendorff, M. Forsling, D. Poulain*: Plasma oxytocin levels associated with the milk ejection reflex in the sow 49
51. *D. Schams, A. Lahlou-Kassi, P. Glatzel*: Oxytocin concentrations in peripheral blood during the estrous cycle and after ovariectomy in two breeds of sheep with low and high fecundity 49
52. *D. Klingmüller, K. Glänzer, J. Kipnowski, R. Düsing, H. J. Kramer*: Immunoreactive substance P in human plasma: its role in body water homeostasis 50
53. *B. Spyra, K. M. Pirke*: Hypothalamic catecholamine turnover and neuroendocrine dysfunction in starved rats *) 51
54. *D. Büttner, C. C. Wong, U. Müsch, K.-D. Döhler*: Effect of short light/dark photo-periods on synchrony of locomotor activity and hormone secretion in male rats *) 52

ACTH and Adrenal Gland

55. *H. G. Dörr, W. G. Sippell, W. Höller, F. Bidlingmaier, D. Knorr*: Effects of short-term ACTH stimulation on plasma levels of 8 corticosteroids and progestins in normal men and women 54
56. *W. Oelkers, A. Köhler, R. Fuchs-Hammoser, L. Belkien, M. Maiga, P. C. Weber, B. Scherer*: Stimulation of renin and angiotensin II by prolonged low-dose ACTH infusion in man 55
57. *G. Wambach, A. Helber, W. Hummerich, G. Bönner*: Primary hyperaldosteronism: differentiation between adrenal adenoma and bilateral hyperplasia 56
58. *G. v. Mittelstaedt, P. Vecsei, E. Hackenthal, M. Georgi, D. Haack, Th. Filser, K. Lichtwald*: An unusual case of primary aldosteronism due to adrenal adenoma and with elevated plasma renin activity 57
59. *W. Saeger, D. K. Lüdecke, U. Desaga*: Pituitary-dependent Cushing's disease with adrenal adenoma. Report of three cases 57
60. *B. Allolio, F. X. Hipp, W. Winkelmann*: Hormonal effects of an enkephalin analogue in patients with ACTH hypersecretion 58
61. *P. Schwandt, W. O. Richter*: Perfusion of isolated rabbit fat cells with the peptide hormones β -lipotropin and ACTH 60
62. *D. K. Lüdecke, H. C. Mächler, J. Caselitz, W. Saeger*: ACTH and cortisol patterns after selective adenomectomy in Cushing's disease *) 61
63. *W. Winkelmann, B. Allolio, D. Heesen, F. X. Hipp, R. Mies*: Remission of Cushing's syndrome with hypersecretion of ACTH and prolactin during bromocriptine therapy *) 62

64. *M. Fenske, H. J. Voss, C. Welp, B. Koetzner, S. Pich, W. Holtz*: Activation of the pituitary-adrenal system in the pig by stress factors: evidence for a slow and rapid adrenal response *). 63
65. *D. Haack, K. Lichtwald, P. Vecsei*: Kinetics of cortisol and betamethasone plasma concentrations estimated by specific RIA after single per os and i.m. administration *) 64
66. *F. H. Venema, W. Oelkers*: Interaction between ACTH and angiotensin II on bovine adrenal fasciculata cells *). 65

Growth Hormone, Prolactin, Somatostatin

67. *H.-J. Quabbe*: Treatment results in 235 patients with acromegaly. A report of the Acromegaly Study Group. 66
68. *T. Eversmann, R. Dorow, R. Horowski, K. von Werder, R. Zimmermann*: Effect of lisuride on growth hormone and prolactin levels in hyperprolactinemic and acromegalic patients 67
69. *R. Dorow, K.-J. Gräf, R. Horowski*: Effects of chronic treatment with metoclopramide and lisuride on serum prolactin and spermatogenesis in healthy volunteers 68
70. *A. Dietz, J. Schopohl, T. Eversmann, K. von Werder*: Heterogeneity of human growth hormone and prolactin: influence of bromocriptine 70
71. *W. Völker, W. G. Gehring, A. von zur Mühlen*: Impaired pituitary response to bromocriptine suppression: reversal after bromocriptine plus tamoxifen 71
72. *E. Fritschka, M. H. Kroll, H.-P. Vogel, M. Kroll, H.-J. Quabbe*: Diurnal variations of growth hormone, prolactin and cortisol secretion in patients with apallic syndrome 72
73. *K. H. Usadel, G. T. Gallagher, J. Wdowinski, U. Schwedes, S. Szabo*: Protective effect of somatostatin or partial hepatectomy on phalloidin intoxication in the rat . . . 73

Gonadotropins

74. *E. J. Wickings, G. Brabant, P. Zaidi, E. Nieschlag*: Spontaneous or pump-induced LH-spikes as a requirement for full testicular function in rhesus monkeys 74
75. *M. Schmidt-Gollwitzer, W. Hardt, K. Schmidt-Gollwitzer, J. Nevimny-Stickel*: Influence of chronic administration of low doses of Buserelin on reproductive function in fertile women 75
76. *J. P. Hanker, E. Nieschlag, H. P. G. Schneider*: Frequency-modulated pulsatile LH-RH substitution in hypothalamo-amenorrhic women 75
77. *A. Römmler, R. Daumann-Abel*: Contraceptive steroids and pituitary response to GnRH: I. Effects of ethinyl estradiol, lynestrenol and D-norgestrel 76
78. *L. Wildt, S. Niesert, G. Leyendecker*: Effect of naloxone on LH, FSH and prolactin secretion in patients with hypothalamic amenorrhea 77
79. *R. Koll, W. Braendle, G. Bettendorf*: FSH-substitution therapy in ovarian insufficiency 78
80. *W. Braendle, R. Koll, G. Bettendorf*: Spontaneous LH modulation in ovarian insufficiency. 79
81. *K. Mann, P. Haidl, B. Hammerl, H. J. Karl*: Incidence of hCG subunits in patients with hCG-positive nonseminomatous testicular germ cell tumors 80
82. *H. Haarman, A. Römmler, J. Hammerstein*: Contraceptive steroids and pituitary response to GnRH: II. Dosage- and time-dependent effects of lynestrenol *) . . . 81
83. *E. Schallenberger, A. J. Peterson*: The effect of ovariectomy on tonic gonadotropin secretion in cycling and post-partum dairy cows *) 82
84. *W. E. Merz, M. Sessler*: Adenylcyclase-stimulating activity of enzymatically modified chorionadotropin using rat Leydig cells purified by Percoll density gradient centrifugation *) 83

	Page
85. <i>H. G. Gosslar, S. G. Haider, D. Passia</i> : Effects of cyproterone acetate on the hypophysal-testicular axis in the frog <i>Rana temporaria</i> during the winter season *)	84
86. <i>G. Benker, G. K. Wettscherek, L. Tharandt, N. Graben, K. Pistor, D. Reinwein</i> : Plasma glycoprotein hormone α -subunit in chronic renal failure in children and adults: relationship to pubertal development and thyrotropin levels *)	85

Somatomedins and Insulin

87. <i>O. Butenandt, W. Seeholzer</i> : Levels of so-called somatomedin-B in insulin-treated juvenile diabetes mellitus	86
88. <i>B. Pfeifle, R. Fußgänger, V. Maier, H. Ditschuneit</i> : Protein metabolism of insulin-like growth factors and binding to cultivated arterial smooth muscle cells	87
89. <i>B. Pfeifle, V. Maier, H. Ditschuneit</i> : DNA and RNA synthesis in arterial smooth muscle cells by serum of normals, diabetics and patients with pituitary disease	87
90. <i>T. Koschinsky, C. Bünting, M. Spindler-Barth, R. Rütter, F. A. Gries</i> : Low molecular weight growth factors for human fibroblasts and arterial smooth muscle cells in serum from non-insulin dependent diabetics	88
91. <i>Th. Weber, J. Beyer, A. Westerburg, G. Schulz, W. Hassinger, U. Krause, U. Cordes</i> : Recombinant human insulin: a comparison of biological potency and endocrine counterregulation to porcine insulin	88
92. <i>H. Laube, J. Svedberg, G. Sachse, H. Teschemacher</i> : The effect of a synthetic morphine derivative (levorphanol) on the isolated perfused rat pancreas	89
93. <i>R. Zick, A. Hammer, E. Schlatter, H. J. Schurek</i> : Renal handling of pig insulin and human synthetic c-peptide as studied in the isolated perfused rat kidney	90
94. <i>M. Schwenen, P. Schadewaldt, W. Staib</i> : Glucocorticoid and insulin-dependent regulation of skeletal muscle alanine release	91

Estrogens, Androgens, Gonadal Function

95. <i>G. Emons, P. Ball</i> : Effects of catecholestrogen-benzoates on luteinizing hormone secretion in long-term ovariectomized rats	92
96. <i>H. Th. Schneider, F. Möller, H. Breuer</i> : Non-genomic effect of 2-hydroxyestradiol-17 β on LH pattern in plasma of ovariectomized rats	93
97. <i>G. Köster, H. Breuer</i> : 2-hydroxyestradiol-17 β affects the metabolism of noradrenaline in rat brain in vivo	94
98. <i>H. Junkermann, B. Runnebaum</i> : Progesterone metabolism in human myometrium before and after the onset of labor	95
99. <i>N. Kühn-Velten, H. Schumacher, T. Bunse, W. Staib</i> : Effects of estrogens and antiestrogens on rat testicular steroidogenesis	96
100. <i>W. Fröhlich, B. Schenck, F. Neumann</i> : Effects of estradiol and different antiandrogens on rat testicular tissue in vitro	97
101. <i>U. Habenicht</i> : The role of androgens and the anti-Müllerian hormone for testicular descent	98
102. <i>W. D. Hetzel, R. Geiger, N. M. Qureshi</i> : Effect of testosterone on prolactin and gonadotropin release in the castrated male rat	99
103. <i>D. Berg, F. Thaler, E. Kuss</i> : Concentration of catecholestrogens in human serum *)	100
104. <i>G. Emons, P. Ball</i> : Induction of ovulation in immature female rats by a single injection of 4-hydroxyestradiol-benzoate *)	101
105. <i>H. M. Bolt, A. E. Schindler</i> : A comparison of oral pharmacokinetics of estradiol, estrone sulfate and a pharmaceutical preparation of "conjugated estrogens" *)	102

	Page
106. <i>D. Graf, G. Reichel, D. Engelhardt, H. J. Karl</i> : Metabolism of androgens in human skeletal, heart and smooth muscle tissue *)	103
107. <i>U. Habenicht, F. Neumann</i> : The influence of prenatal exposure to ethinylestradiol on the postnatal development of the genital ducts in male and female rats *)	104
108. <i>A. S. Wolf, K. Musch, Ch. Lauritzen</i> : Interference of steroids with the metabolism of DHA in the perfused human placenta *)	105
109. <i>M. Schumacher, M. Schwarz, V. Lichtenberg</i> : Effect of cell concentration on the response of Leydig cells to hCG and DBcAMP *)	106
110. <i>L. Pitzel, T. Kendoff, M. Fenske, A. König</i> : Increase of testicular testosterone release after ACTH injection into male rabbits *)	107

Pubertal Disorders

111. <i>J. C. Commentz, R. P. Willig</i> : Radioimmunological determination of diurnal melatonin plasma levels in children with Turner's syndrome using a new antiserum	108
112. <i>H. G. Bohnet, J. P. Hanker, J. Brämswig</i> : Prolactin secretion in girls with Turner's syndrome during hypothalamic maturation	109
113. <i>S. Korth-Schütz, B. Weber, H. Helge</i> : Testosterone and dehydroepiandrosterone sulfate concentrations in boys with delayed puberty: effect of oxandrolone therapy	110
114. <i>J. Happ, A. Benner, U. Krause, J. Beyer</i> : Treatment of delayed puberty with a potent GnRH analog. Effectiveness of a low-dose regimen	112
115. <i>R. P. Willig, D. Christiansen, N. Kuhn, E. Schaefer, N. Stahnke</i> : How safe are height predictions in tall girls?	113

Prostaglandins

116. <i>G. Scherthaner, K. Silberbauer, H. Sinzinger, Ch. Leitner, H. Templ</i> : Hormonal effects of prostaglandin I ₂ (PGI ₂) infusion in man	114
117. <i>H. J. Kramer, D. Klingmüller, G. Klautke, J. Kipnowski, R. Düsing</i> : Interaction of renal prostaglandins with the renin-angiotensin and adrenergic systems during altered sodium balance in healthy subjects	115
118. <i>M. M. C. Landgraf-Leurs, R. Landgraf, A. Loy, P. C. Weber, L. Herberg</i> : The role of hyperglycemia on platelet aggregation and aortic prostacyclin production. Studies with genetically diabetic rats.	116
119. <i>J. Urdinola, W. Schlegel, H. P. G. Schneider</i> : 13,14-dihydro-15-keto-prostaglandins E ₂ and F _{2a} concentrations in plasma from normal and anovulatory women	117
120. <i>H. Sander, Th. Bruhn, S. Vaje, F. Elsaesser, W. Elger</i> : Prostaglandin E (sulproston) induces luteolysis in late pregnancy but not during the estrus cycle in the pig.	118
121. <i>K. Schmidt-Gollwitzer, B. Nieuweboer, B. Husen, M. Schmidt-Gollwitzer</i> : Serum concentrations of the Pg E ₂ -derivative sulproston and its influence on hormonal parameters in abortion	119
122. <i>H. P. Zahradnik, R. Schöning, M. Breckwoldt</i> : Prostacyclin (6-keto-PGF _{1a}), prostaglandin F _{2a} (PGF _{2a}) and prostaglandin E ₂ liberation from superfused spontaneously contracting pregnant human myometrium stripes.	119
123. <i>K. Demisch, G. Pitzer</i> : Determination of prostaglandins in human seminal plasma	120

Hormone Receptors

124. <i>T. O. F. Wagner</i> : Subcellular distribution of pituitary gonadotropin releasing hormone receptors *)	121
---	-----

	Page
125 <i>Th. Bauknecht, J. W. Siebers</i> : Covalent linkage and physicochemical characterization of receptor bound 125-I-HCG *)	122
126. <i>M. Krieg, G. Klötzl, K. D. Voigt</i> : Preferable androgen metabolism and estrogen binding in the stroma of human benign prostatic hyperplasia *)	122
127. <i>T. Genz, J. Eiletz</i> : Distribution of cytoplasmic and nuclear estrogen receptors in human breast cancer *)	123
128. <i>J. Eiletz, T. Genz, T. Scheibner, A. Asdie</i> : Variation of nuclear and cytoplasmic hormone receptor content in human endo-and myometrium throughout the menstrual cycle *)	124
129. <i>H. H. D. Meyer, R. K. Wagner, P. W. Jungblut</i> : The sensitivity of steroid receptors to hyaluronidase *)	124
130. <i>W. Sierralta, A. M. Pino, M. Dehnhardt</i> : Studies on the stability of the estrogen receptor in uterine cytosols and the involvement of lysosomes in receptor decay *)	125
131. <i>P. I. Szendro, P. W. Jungblut</i> : Improved extraction of microsomal estrogen receptor from porcine uteri *)	126
132. <i>I. Maschler, J. Gaues</i> : A superfusion technique for studying receptor translocation and steroid metabolism in porcine uteri *)	127

21. Influence of acute iodine incorporation on thyroid function and thyroidal iodine content

J. HABERMANN¹, B. LEISNER², C. R. PICKARDT¹, A. WITTE¹, P. C. SCRIBA³, *Medizinische Klinik Innenstadt¹ der Universität München, Klinik und Poliklinik für Radiologie² Universität München, Klinik für Innere Medizin³, Medizinische Hochschule Lübeck*

The increasing administration of iodine-containing compounds in diagnostic and therapeutic procedures raises the question of the influence of these compounds on thyroidal iodine content and thyroid function tests in an iodine deficiency area.

Material and methods: Normal volunteers (N=9, age 23–34 years) gargled for 2 days with 9 ml polyvinylpyrrolidone-iodine solution (PVP-I, Betaiodona®). Three to four hours after PVP-I contact and on consecutive days (Tab. 1) thyroid function (T₃, T₄, TBG, TSH before and after TRH), total iodine in serum (PBI) and urine (Sandell-Kolthoff-reaction) and stable iodine in the thyroid (fluorescence scan [1]) were determined. In addition urinary iodine was measured after fractionation on Sephadex G-10. In another group of patients (N=26, age 36–65) these parameters were measured before and after application of contrast media for coronary angiography. These results were compared with the initial values and checked for significance by paired t-test.

Results: Iodine from urinary specimens after PVP-I application coeluted exclusively with the I-125 peak in Sephadex chromatography, whereas iodine from native PVP-I solution was

found in the void volume of the column. In both groups stable thyroidal iodine increased significantly, reaching peak values 48 h after the last PVP-I and 3 weeks after contrast media at the earliest. Thyroid hormone levels in serum and T_3/T_4 ratios did not change after PVP-I. The initial effect seen after angiography was a decrease of the T_3/T_4 ratio. T_4/TBG ratio was found to be increased three weeks after iodine incorporation. In both groups TSH responses after TRH were significantly lowered two weeks after PVP-I and three weeks after angiography, respectively.

Discussion: High amounts of iodine were resorbed after PVP-I contact with mucous membranes. The resulting high iodine levels in serum seem to cause an inhibition of thyroidal iodine trapping (Wolff-Chaikoff effect), since the initial increase in stable iodine content of the thyroid was low and peak values occurred with a latency of 2 days. No decrease of thyroid hormone release could be observed. When the iodine levels in serum dropped, the TSH response to TRH was depressed. These effects were similar after incorporation by the radiographic contrast media. The results reflect the high sensitivity of the thyroid regulation systems to changes in iodine deficiency area.

Table 1

PVP-I		Before	1.	2.	3.	4.	7	14.
Thyroid-I	\bar{x}	400	443 ^a	462 ^a	470 ^a	490 ^a	481 ^a	472 ^a
($\mu\text{g/g}$)	SD	112	129	93	94	87	102	108
Urinary I	\bar{x}	47	3,282 ^a	3,805 ^a	1,955 ^a	143 ^a	45	58
($\mu\text{g/g cr.}$)	SD	12	2,640	3,237	3,087	78	14	40
PBI/ T_4	\bar{x}	0.83	3.04 ^a	3.50 ^a	1.28 ^a	1.04 ^a	0.96 ^a	0.84
	SD	0.07	0.72	1.20	0.28	0.13	0.11	0.05
TSH-30	\bar{x}	8.1	—	—	7.2 ^a	—	6.8 ^a	4.8 ^a
($\mu\text{U/ml}$)	SD	2.4			3.5		3.2	2.3
Contrast med.		Before	1 week	2 weeks	8 weeks			
Thyroid-I	\bar{x}	208	214 ^a	251 ^a	235 ^a			
($\mu\text{g/g}$)	SD	104	81	103	97			
Urinary I	\bar{x}	46	440 ^a	86 ^a	52			
($\mu\text{g/g cr.}$)	SD	37	279	52	23			
PBI/ T_4	\bar{x}	0.88	1.13 ^a	0.95 ^a	0.92			
	SD	0.17	0.32	0.13	0.10			
TSH-30	\bar{x}	7.8	6.8 ^a	5.3 ^a	6.2 ^a			
($\mu\text{U/ml}$)	SD	3.2	4.6	3.4	3.7			

^a $p < 0.001$.

References

1. Leisner, B., Kantlehner, R., Heinze, H. G., Lissner, J.: Fortschr. Röntgenstr. 130 (1979), 694

Supported by Bundesministerium des Inneren.