Interdisciplinary Neuroendocrinology

Frontiers of Hormone Research

Vol. 12

Series Editor
Tj. B. van Wimersma Greidanus, Utrecht

KARGER

S. Karger • Basel • München • Paris • London • New York • Tokyo • Sydney

1st Int. Meeting on Interdisciplinary Neuroendocrinology, Graz, June 16-18, 1983

Interdisciplinary Neuroendocrinology

Volume Editors
M. Ratzenhofer, Graz
H. Höfler, Graz
G.F. Walter, Graz

80 figures and 22 tables, 1984

KARGER

S. Karger • Basel • München • Paris • London • New York • Tokyo • Sydney

Frontiers of Hormone Research

National Library of Medicine, Cataloging in Publication
Interdisciplinary neuroendocrinology
(Frontiers of hormone research, v 12)
“The First International Meeting on Interdisciplinary Neuroendocrinology in Graz was dedicated to my teacher Friedrich Feyrter” — Pref Meeting held in 1983.
Includes index
1 Endocrinology - congresses 2 Nerve Tissue Proteins — congresses 3 Neurology - congressess 1 Ratzenhofer,
Drug Dosage
The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.

All rights reserved.
No part of this publication may be translated into other languages, reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, microcopying, or by any information storage and retrieval system, without permission in writing from the publisher

© Copyright 1984 by S. Karger AG, P.O. Box, CH-4009 Basel (Switzerland)
Satz. Satzstudio Frohberg, D-6463 Freigericht
Printed in Switzerland by Thur AG Offsetdruck, Pratteln
ISBN 3-8055-3804-9

Contents

Preface IX

Pearse, A.G.E. (London): The Diffuse Neuroendocrine System: Historical Review . 1
Dockray, G.J. (Liverpool): The Chemistry of Neuropeptides 8
Tatemoto, K. (Stockholm): Isolation of New Peptides from Brain and Intestine ... 27
Solda, E.; Capella, C.; Fiocca, R.; Sessa, F.; Tend, P.; Rindi, G.; Tortora, O. (Pavia): Ultrastructural and Immunohistochemical Characterization of F-Type and Dr Type PP Cells and Their Distribution in Normal, Annular, Chronically Inflamed, Heterotopic or Tumor Pancreas 31
Grube, D. (Hannover): Somatostatin (D) Cells in the Endocrine Pancreas of Mammals: Endocrine or Paracrine Elements? 41
Nilsson, O.; Gröndahl, K.-O.; Ahlman, H.; Dahlström, A. (Göteborg): Endoluminal Release of 5-HT from Enterochromaffin Cells in the Rat Small Intestine 44
Krisch, B. (Kiel): Topography and Morphology of the Neuroendocrine Systems in the Central Nervous System 48
Ule, G.; Schwechheimer, K. (Heidelberg): Morphological Feedback Phenomenon in the Nucleus arcuatus (infundibularis) Due to Gonadal Atrophy 55
Forssmann, W.G.; Reinecke, M. (Heidelberg): Organ-Specific Innervation by Autonomic Nerve Fibers as Revealed by Electron Microscopy and Immunohistochemistry 59
Ferri, G.-L. (Bologna/London); Botti, P.L.; Rebecchi, L. (Bologna); Biliotti, G. (Florence); Leli, G. (Bologna); Bloom, S.R. (London); Tonelli, L. (Florence); Labò, G. (Bologna); Polak, J.M. (London): Vasoactive Intestinal Polypeptide-, Substance P- and Met-Enkephalin-Immunoreactive Innervation of the Human Gastrointestinal Mucosa 74

Heym, C.; Reinecke, M. (Heidelberg): Immunohistochemistry of Neuropeptides in Cat Paraganglia 91
Lembeck, F. (Graz): Neuronal versus Endocrine Effects: Substance P as an Example
Saria, A.; Lundberg, J.M. (Graz/Stockholm): Activation of Sensory Substance P Neurones in the Respiratory Tract by Cigarette Smoke, Mechanical and Chemical Irritants 123
Fraser, L.L.; Gaffney, F.A.; Lane, L.L.; Blomqvist, C.G.; Krejs, G.J. (Dallas, Tex.): Effect of Vasoactive Intestinal Polypeptide Infusion on Cardiovascular Function in Man 127
Ratzenhofer, M.; Köle, W.; Walter, G.F. (Graz): Vegetative Neurodystonia - Search for Pathophysiologial and Morphological Data is Urgent 129
Grube, D. (Hannover): Verner-Morrison Syndrome Due to a Pancreatic Neurotensinoma 168
Zalaudek, G.; Höfler, H. (Graz); Samec, H.J. (St. Veit/Glan): Clinical Course and Treatment of a Multihormonal Pancreatic Endocrine Tumor with WDHA Syndrome 172
Jirikowski, G.; Reisert, J.; Pilgrim, C. (Ulm): Effect of Angiotensin II on Neurons Immunoreactive for Neurophysin in Dissociated Cell Culture 176
Gyr, K. (Basel): Therapeutic Application of Gut Hormones 180

Contents VII

Peikin, S.R.; McLaughlin, C.L.; Baile, C.A. (Philadelphia, Pa.): Feeding Elicited by Intragastric Administration of the Cholecystokinin Antagonist Proglumide to Zucker Rats 191

Subject Index 199
Friedrich Feyrter (1895—1973)

Dedicated to Mrs. Josefine Feyrter whose lifelong support and technical skill immensely contributed to Friedrich Feyrter’s magnificent work.

Preface

The First International Meeting on Interdisciplinary Neuroendocrinology in Graz was dedicated to my teacher Friedrich Feyrter. It is my agreeable obligation to commemorate this ingenious Austrian discoverer of the diffuse endocrine clear cell system which he detected in gut, pancreas and other organs. It was Feyrter's manner to observe with his simple microscope most exactly, then to ponder and finally to draw his conclusions with perfectly clear logic. Born in Vienna, professor of pathology in Danzig, Graz and Göttingen, he preceded the scientific knowledge of his time by almost half a century. He was sovereignly leading in his field although he had to work without the impressive present methods. Then, the medical world did not remark the value of his studies and only his own teacher Schaffer and the famous Aschoff recognized his theory of the diffuse endocrine clear cell system. They and few others like C. Coronini and A. Sturm who founded in 1950 the Acta neurovegetativa, accepted the concepts of endocrinia (= haemocrinia), paracrinia and neurocrinia. Feyrter already conceived the neuroendocrinum with his discovery of the close topographic relation between subepithelial endocrine cells and nerves, e.g. in the bronchus of new-borns where in 1981 Bloom and Polak found bombesin cells, and with his confirmation of Masson’s ‘appendicite neurogène’. His description of the endocrine-nervous enteropathy in patients with ‘appendicite neurogène’ proves the broad medical context of his work. Feyrter's scientific results and his theories have been collected in his main oeuvres: Pathologie der vegetativen nervösen Peripherie (1951), Über die peripheren endokrinen (parakrinen) Drüsen des Menschen (1953) and Über die Pathologie peripherer vegetativer Regulationen (1966). He fully reviewed this topic in Kaufmann’s Lehrbuch der speziellen pathologischen Anatomie (1969). His books never have been translated into English nor taken into consideration in the English literature.

It was many years later that A. G.E. Pearse - first without knowledge of Feyrter's work — was able to confirm the ideas of Feyrter. Soon, immunohistochemical and ultrastructural findings were reported by several groups. After the first silent morphological revolution by Feyrter, Pearse...
kindled a vast second international explosion of physiological and biochemical knowledge. With his amine precursor uptake and decarboxylation (APUD) concept he united the diffuse endocrine clear cell system with the neuropeptidergic system to the new neuroendocrinum.

The detection of different peptides in the brain, for instance by the school of Hökfelt and the neuroanatomic school of Bargmann, was the basis for recent topochemical findings which push forward even into psychiatric problems. The peptidergic regulatory system attached to the autonomic sympathetic and parasympathetic systems has expanded the vegetative nervous system and brings huge consequences for practical medicine, e.g. in the large field of psychosomatic complaints.

It was the aim and the task of the First International Meeting on Interdisciplinary Neuroendocrinology to review basic results and to elucidate new findings from many sides mediating the knowledge to medical practitioners. Future progress shall very much depend upon an intensive cooperation between theory and medical practice.

Max Ratzenhofer
President of the Meeting