YEAR BOOK®

YEAR BOOK OF PSYCHIATRY AND APPLIED MENTAL HEALTH®

1990

TALBOTT
A. FRANCES
R. FRANCES
FREEDMAN
MELTZER
SCHOWALTER
YUDOFSKY

1990

The Year Book of PSYCHIATRY AND APPLIED MENTAL HEALTH®

Editor-in-Chief
John A. Talbott, M.D.

Editors
Allen Frances, M.D.
Richard J. Frances, M.D.
Daniel X. Freedman, M.D.
Herbert Y. Meltzer, M.D.
John E. Schowalter, M.D.
Stuart C. Yudofsky, M.D.

Assistant Editor to Dr. Freedman
Barry H. Guze, M.D.

Year Book Medical Publishers, Inc.
Chicago • London • Boca Raton • Littleton, Mass.

Printed in U.S.A.

International Standard Book Number: 0-8151-8930-3

International Standard Serial Number: 0084-3970

Editor-in-chief, Year Book Publishing: Nancy Gorham
Sponsoring Editor: Sharon Tehan
Senior Medical Information Specialist: Terri Strorigl
Assistant Director, Manuscript Services: Frances M. Perveiler
Associate Managing Editor, Year Book Editing Services: Elizabeth Fitch
Production Coordinator: Max F. Perez
Proofroom Supervisor: Barbara M. Kelly

1990
YEAR BOOK OF
PSYCHIATRY AND APPLIED
MENTAL HEALTH®

The 1990 Year Book® Series

Year Book of Anesthesia®: Drs. Miller, Kirby, Ostheimer, Roizen, and Stoelting

Year Book of Cardiology®: Drs. Schlant, Collins, Engle, Frye, Kaplan, and O'Rourke

Year Book of Critical Care Medicine®: Drs. Rogers and Parrillo

Year Book of Dentistry®: Drs. Meskin, Ackerman, Kennedy, Leinfelder, Matukas, and Rovin

Year Book of Dermatology®: Drs. Sober and Fitzpatrick

Year Book of Diagnostic Radiology®: Drs. Bragg, Hendee, Keats, Kirkpatrick, Miller, Osborn, and Thompson

Year Book of Digestive Diseases®: Drs. Greenberger and Moody

Year Book of Drug Therapy®: Drs. Hollister and Lasagna

Year Book of Emergency Medicine®: Dr. Wagner

Year Book of Endocrinology®: Drs. Bagdade, Braverman, Halter, Horton, Kannan, Korenman, Molitch, Morley, Odell, Rogol, Ryan, and Sherwin

Year Book of Family Practice®: Drs. Rakel, Avant, Driscoll, Prichard, and Smith

Year Book of Geriatrics and Gerontology®: Drs. Beck, Abrass, Burton, Cummings, Makinodan, and Small

Year Book of Hand Surgery®: Drs. Dobyns, Chase, and Amadio

Year Book of Hematology®: Drs. Spivak, Bell, Ness, Quesenberry, and Wiernik

Year Book of Infectious Diseases®: Drs. Wolff, Barza, Keusch, Klempner, and Snydman

Year Book of Infertility: Drs. Mishell, Lobo, and Paulsen

Year Book of Medicine®: Drs. Rogers, Des Prez, Cline, Braunwald, Greenberger, Wilson, Epstein, and Malawista

Year Book of Neonatal and Perinatal Medicine: Drs. Klaus and Fanaroff

Year Book of Neurology and Neurosurgery®: Drs. Currier and Crowell

Year Book of Nuclear Medicine®: Drs. Hoffer, Gore, Gottschalk, Sostman, Zaret, and Zubal

Year Book of Obstetrics and Gynecology®: Drs. Mishell, Kirschbaum, and Morrow

Year Book of Occupational and Environmental Medicine: Drs. Emmett, Brooks, Harris, and Schenker

Year Book of Oncology: Drs. Young, Longo, Ozols, Simone, Steele, and Weichselbaum

Year Book of Ophthalmology®: Dr. Laibson, Adams, Augsburger, Benson, Cohen, Eagle, Flanagan, Nelson, Reinecke, Sergott, and Wilson

Year Book of Orthopedics®: Drs. Sledge, Poss, Cofield, Frymoyer, Griffin, Hansen, Johnson, Springfield, and Weiland

Year Book of Otolaryngology–Head and Neck Surgery®: Drs. Bailey and Paparella

Year Book of Pathology and Clinical Pathology®: Drs. Brinkhous, Dalldorf, Grisham, Langdell, and McLendon

Year Book of Pediatrics®: Drs. Oski and Stockman

Year Book of Plastic, Reconstructive, and Aesthetic Surgery®: Drs. Miller, Bennett, Haynes, Hoehn, McKinney, and Whitaker

Year Book of Podiatric Medicine and Surgery®: Dr. Jay

Year Book of Psychiatry and Applied Mental Health®: Drs. Talbott, Frances, Frances, Freedman, Meltzer, Schowalter, and Yudofsky

Year Book of Pulmonary Disease®: Drs. Green, Ball, Loughlin, Michael, Mulshine, Peters, Terry, Tockman, and Wise

Year Book of Speech, Language, and Hearing: Drs. Bernthal, Hall, and Tomblin

Year Book of Sports Medicine®: Drs. Shephard, Eichner, Sutton, and Torg, Col. Anderson, and Mr. George

Year Book of Surgery®: Drs. Schwartz, Jonasson, Peacock, Shires, Spencer, and Thompson

Year Book of Urology®: Drs. Gillenwater and Howards

Year Book of Vascular Surgery®: Drs. Bergan and Yao

Editor-in-Chief

John A. Talbott, M.D.

Professor and Chairman, Department of Psychiatry, University of Maryland School of Medicine; Director, Institute of Psychiatry and Human Behavior, University of Maryland Medical Systems, Baltimore

Editors

Allen Frances, M.D.

Professor of Psychiatry, Department of Psychiatry, New York Hospital–Cornell Medical Center, Cornell University

Richard J. Frances, M.D.

Professor of Clinical Psychiatry; Vice Chairman and Director of Residency Training; University of Medicine and Dentistry of New Jersey, New Jersey Medical School, Newark

Daniel X. Freedman, M.D.

Judson Braun Professor of Psychiatry and Pharmacology and Executive Vice-Chairman, Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Neuropsychiatric Institute, Center for the Health Sciences

Herbert Y. Meltzer, M.D.

Douglas Bond Professor of Psychiatry, Case Western Reserve University School of Medicine, Cleveland

John E. Schowalter, M.D.

Chief of Child Psychiatry, Albert J. Solnit Professor of Child Psychiatry and Pediatrics, Yale Child Study Center

Stuart C. Yudofsky, M.D.

Professor and Chairman, Department of Psychiatry, University of Chicago

Assistant Editor to Dr. Freedman

Barry H. Guze, M.D.

Assistant Professor, Department of Psychiatry and Biobehavioral Sciences, Neuropsychiatric Institute, University of California at Los Angeles

Journals Represented

Year Book Medical Publishers subscribes to and surveys nearly 850 U.S. and foreign medical and allied health journals. From these journals, the Editors select the articles to be abstracted. Journals represented in this YEAR BOOK are listed below.

Acta Psychiatrica Scandinavica
Administration and Policy in Mental Health
Alabama Journal of Medical Sciences
American Heart Journal
American Journal of Diseases of Children
American Journal of Epidemiology
American Journal of Human Genetics
American Journal of Mental Retardation
American Journal of Occupational Therapy
American Journal of Orthopsychiatry
American Journal of Psychology
American Journal of Psychiatry
American Journal of Public Health
American Psychologist
Annals of Allergy
Annals of Neurology
Annals of Plastic Surgery
Archives of General Psychiatry
Archives of Internal Medicine
Archives of Neurology
Archives of Physical Medicine and Rehabilitation
Australian and New Zealand Journal of Medicine
Australian and New Zealand Journal of Psychiatry
Behavior Research and Therapy
Biological Psychiatry
Brain—Journal of Neurology
British Journal of Medical Psychology
British Journal of Psychiatry
British Journal of Urology
British Medical Journal
Bulletin of the American Academy of Psychiatry and the Law
Bulletin of the Menninger Clinic
Canadian Journal of Psychiatry
Child Development
Community Mental Health Journal
Comprehensive Psychiatry
Convulsive Therapy
Family Practice
Family Process
General Hospital Psychiatry
Gerontologist
Hospital and Community Psychiatry
International Journal of Eating Disorders
International Journal of Geriatric Psychiatry
Journal of Advanced Nursing
Journal of Affective Disorders
Journal of Autism and Developmental Disorders
Journal of Child and Adolescent Psychiatry

Journal of Clinical Epidemiology
Journal of Clinical Psychiatry
Journal of Clinical Psychopharmacology
Journal of Consulting and Clinical Psychology
Journal of Emergency Medicine
Journal of Gerontology
Journal of Health and Social Behavior
Journal of Learning Disabilities
Journal of Marital and Family Therapy
Journal of Mental Deficiency Research
Journal of Nervous and Mental Disease
Journal of Neural Transmission
Journal of Neurology, Neurosurgery and Psychiatry
Journal of Neuropsychiatry
Journal of Neuroscience
Journal of Occupational Medicine
Journal of Pediatrics
Journal of Pharmacology and Experimental Therapeutics
Journal of Psychiatric Research
Journal of Psychosomatic Research
Journal of Rheumatology
Journal of the American Academy of Child and Adolescent Psychiatry
Journal of the American Geriatrics Society
Journal of the American Medical Association
Journal of the Royal College of Surgeons of Edinburgh
Journal of Studies on Alcohol
Lancet
Life Sciences
Mayo Clinic Proceedings
Medical Care
Nature
Neurology
New England Journal of Medicine
New Zealand Medical Journal
Nursing Research
Pediatrics
Progress in Neuro-Psychopharmacology and Biological Psychiatry
Psychiatry
Psychiatry Research
Psychological Medicine
Psychoneuroendocrinology
Psychopharmacology
Psychosomatic Medicine
Psychosomatics
Revue Neurologique
Scandinavian Journal of Work Environment and Health
Schizophrenia Bulletin
Science
Social Casework
Southern Medical Journal

Standardized Abbreviations

Many times throughout this edition, the *Diagnostic and Statistical Manual of Mental Disorders,* ed III (or ed III–revised) is mentioned. Rather than spell out this title in full each time it is used, we have chosen to use the abbreviation *DSM-III* (or *DSM-IIIR*) instead.

Publisher's Preface

Once again we have the occasion to heartily welcome two new YEAR BOOK OF PSYCHIATRY AND APPLIED MENTAL HEALTH board members, Richard Frances, M.D., and Stuart Yudofsky, M.D. Dr. Frances, professor of Clinical Psychiatry and vice chairman and director of residency training at the University of Medicine and Dentistry of New Jersey, selected and commented on material related to alcohol and drug abuse. Dr. Yudofsky, professor and chairman of the Department of Psychiatry at the University of Chicago, selected and commented on material related to clinical psychiatry.

Also, we would like to thank Allen Frances, M.D., for his excellent contribution to the 1989 and 1990 editions of the YEAR BOOK. Samuel Perry, M.D., at the Payne-Whitney clinic in New York, will join the board with the 1991 edition and select and comment on the material related to Psychotherapy in Dr. Allen Frances' place. We wish the best to both.

Introduction

This has been an exciting year in psychiatry, a year during which *Nature* published a report of several families demonstrating the same chromosome 5 link to schizophrenia, and the year when clozapine became available for the treatment of persons with schizophrenia. It was also the year in which more studies derived from the Epidemiological Catchment Area Study were published. But probably most significant, it was a year in which the increased sophistication and breadth of research in a variety of areas became obvious. These include such disparate areas as neurotransmitters and mental health services.

This has also been a year when the editorship of the chapter in this YEAR BOOK on clinical psychiatry passed from Herbert Weiner to Stuart Yudofsky; when Richard Frances began his editorship of the chapter on alcohol and drug abuse; and when Allen Frances announced his intention to resign from the Board of Editors because of other pressing commitments (primarily shepherding *DSM-IV* to completion).

Dr. Yudofsky is a renowned authority on head injury and the treatment of aggression. He is co-editor of both the *Textbook of Neuropsychiatry* and the *APPI Textbook of Psychiatry,* and currently serves as Professor and Chairman of the Department of Psychiatry at the University of Chicago. Dr. Richard Frances, a national authority on alcohol and drug abuse, is the co-author of *A Concise Guide to Treatment of Alcoholism and Addictions* and 58 other publications. He also serves as Professor and Vice-Chairman of the Department of Psychiatry at the New Jersey Medical School. Dr. Samuel Perry, who will join our board with the 1991 edition, is associated with the Payne-Whitney clinic in New York City. All three are welcome additions to our hard-working group.

John A. Talbott, M.D.

Table of Contents

The material in this volume represents literature reviewed through June 1989.

1 Biologic Psychiatry

Introduction

The high quality of papers in the area of biological psychiatry reflects the maturation of this field of inquiry in the past several decades. This is especially noticeable in the area of schizophrenia research, in which the lag time between basic science advances and application to clinical research has become exceedingly small. Research into the role of various neurotransmitters in schizophrenia, from the venerable dopamine to revivals of interest in serotonin, and to newcomers such as the sigma opiate, glutamate, and adenosine systems, is beginning to do justice to the complexity of this disorder. As our understanding of the interactions between neurotransmitter systems increases, we can begin to make provocative linkages between multiple neurotransmitters that may help to explain why there could be, for example, both increased and decreased dopaminergic activity in different brain regions. Glutamate and serotonin, which modulate dopaminergic activity, may be critical for understanding the apparent dopamine abnormalities in schizophrenia. The net result of neuropsychological, neuropathological, and brain imaging studies has been to broaden the focus in schizophrenia research from overemphasis on a frontal lobe deficit to the temporal lobe as well, while studies of laterality abnormalities continue to demonstrate positive results. Increasing sophistication in magnetic resonance imaging and positron emission tomographic scanning now makes it much easier to conduct studies of the human brain. No specific biologic markers for schizophrenia have yet been found. Specific eye tracking deficits have not been validated, nor has chromosome 5 linkage in schizophrenia been confirmed. The major advance in treatment, clozapine, may provide leads as to the biology of schizophrenia.

Research in affective disorders still concentrates heavily on the hypothalamo-pituitary-adrenal (HPA) axis. Because of the lack of specificity of the dexamethasone suppression test (DST) as originally described, investigators have developed much more sophisticated ways to carry out this test (e.g., to include dexamethasone levels) and to analyse the data. More importantly, new methods of studying the HPA axis have been developed. The corticotropin releasing factor challenge, although again not specific, has helped to identify the etiology of the DST abnormality and the overactivity of the HPA axis in general. The role of serotonin in depression is being clarified through studies with the precursor tryptophan, neuroendocrine challenge studies, and studies of the cerebrospinal fluid.

In research concerning depression, anxiety, Alzheimer's disease, and schizophrenia, interest in subtypes of various receptors has emerged as an

important focus. This specificity provides an opportunity for drug development and also contributes to understanding the nature of the neurotransmitter abnormality in a given disorder. Excessive amounts of activity at a D-1 receptor might cancel out the effect of excessive D-2 receptor stimulation if these receptors occur on the same cell because the D-1 and D-2 receptors have opposing effects on second messengers. The 5-HT_2 receptor has emerged as one of critical importance in schizophrenia, depression, and obsessive-compulsive disorder.

Much may be expected from brain imaging in the near future. Single-photon emission computed tomography may represent a low-cost means to image blood flow and receptor mechanisms. There is already evidence in Alzheimer's disease that it is a clinically useful tool. In the next few years this may also be true for schizophrenia and affective disorders.

Herbert Y. Meltzer, M.D.

Schizophrenia

Neurotransmitters, Receptors and Neuropeptides in Post-Mortem Brains of Chronic Schizophrenic Patients

Toru M, Watanabe S, Shibuya H, Nishikawa T, Noda K, Mitsushio H, Ichikawa H, Kurumaji A, Takashima M, Mataga N, Ogawa A (Shinshu Univ, Matsumoto; Kiyose Hosp, Tokyo; Tokyo Med and Dental Univ; Natl Ctr of Neurology and Psychiatry, Tokyo)

Acta Psychiatr Scand 78:121–137, August 1988 1–1

Antipsychotic drugs that relieve symptoms in acute states of schizophrenia are generally ineffective in chronic states of the disease, which may involve other etiologic factors. To study the etiology of chronic schizophrenia, certain neurotransmitters, metabolites, enzymes, receptors, and neuropeptides were sought in postmortem brain specimens obtained from 14 chronic schizophrenic patients and 10 controls.

The concentration of homovanillic acid was significantly increased in the putamen and in the substantia nigra of schizophrenics, especially those who were taking antipsychotic drugs at the time of death. There was significantly greater tyrosine hydroxylase activity in the caudate and putamen of schizophrenics, and in 10 the mean B_{max} value of ^{3}H-spiperone binding to the putamen was 2.2 times higher than in controls.

The value of substance P was significantly greater in the substantia nigra, the orbitofrontal cortex, and in the cornu Ammonis of the hippocampus among schizophrenic patients. The concentration of methionine-enkephalin was also increased in 3 areas of the prefrontal cortex of schizophrenics.

In these chronic schizophrenics central dopaminergic hyperactivity coexisted with supersensitive dopamine receptors. Thus dopaminergic hyperactivity exists not only in the acute manifestations of schizophrenia but in the chronic state as well.

▶ It is often stated that there is no direct evidence for dopaminergic hyperactivity in schizophrenia. This study is an unusually comprehensive postmortem study of schizophrenia, examining dopamine, homovanillic acid (HVA), tyrosine hydroxylase, and ^{3}H-spiperone binding (D-2 receptor density) as well as other neurochemicals, in a variety of brain regions in both recently nonmedicated and medicated schizophrenics. Evidence for increased dopamine metabolism and D-2 density in subcortical regions was found. A positive correlation between tyrosine hydroxylase activity and the HVA concentration suggests that these measures do provide a measure of brain dopaminergic activity. Unfortunately, the dopamine system in the medial frontal cortex as not examined. However, increased glutamic acid-sensitive ^{3}H-kainic acid binding was found, a possible index of abnormality in the excitatory amino acid system in this region. No differences in glutamate concentration in the medial frontal cortex were found. However, a negative correlation between these 2 measures was observed, suggesting that the increased number of ^{3}H-kainic acid sites may be related to hypofunction of the glutaminergic system. It has been reported that dopamine inhibits the release of glutamic acid from striatal slices and cortico-striatal terminals. Consistent with this, a negative correlation was found between tyrosine hydroxylase in the putamen and glutamic acid concentration in the dorsal medial nucleus of the thalamus.—H.Y. Meltzer, M.D.

The NMDA Antagonist MK-801 Causes Marked Locomotor Stimulation in Monoamine-Depleted Mice

Carlsson M, Carlsson A (Univ of Göteborg, Sweden)

J Neural Transm 75:221–226, 1989 1–2

It has been proposed that a corticostriatothalamocortical negative feedback loop exists in which activation of the mesencephalostriatal dopaminergic pathway would increase cortical stimulation and activation of the glutamatergic corticostriatal pathway would decrease alertness. A corollary of this hypothesis—that both enhanced activity of corticostriatal glutamatergic neurons and decreased activity of dopaminergic mesencephalostriatal neurons will produce similar hypokinetic, sedative, and mood-lowering effects—was studied. Male mice were given reserpine, 10 mg/kg, and α-methyl-para-tyrosine (α-MT), 250 mg/kg, followed by either saline or the selective, noncompetitive N-methyl-D-aspartate (NMDA) antagonist MK-801 ([(+)-5-methyl-10,11-dihydroxy-5H-dibenzo(a,d)cyclohepten-5,10-imine]hydrogen maleate). Their motor activity was then measured.

Mice that received MK-801 exhibited dose-dependent motor activity, whereas mice that received no MK-801 displayed no locomotion. Haloperidol, 1 mg/kg, had no effect on locomotion in MK-801-stimulated mice. Also, MK-801 produced intensive sniffing, Straub tail, hindleg ataxis, and increased irritability, with the highest dosages causing convulsions.

These data provide evidence that the NMDA antagonist MK-801 stimulates motor activity in monoamine-depleted mice. This effect appears to