ovum transport and fertility regulation

WHO symposium
san antonio, texas 1975

ovum transport and fertility regulation

WHO symposium
san antonio, texas 1975

Ovum Transport and Fertility Regulation

Proceedings of a Meeting of the
Task Force on Methods for the Regulation of Ovum Transport
organized by
the World Health Organization
and held at the Lutcher Conference Center of the
University of Texas, San Antonio
on 23–27 June 1975

EDITED BY

M. J. K. Harper
WHO, Geneva, Switzerland

C. J. Pauerstein
San Antonio, USA

C. E. Adams
Cambridge, UK

E. M. Coutinho
Bahia, Brazil

H. B. Croxatto
Santiago, Chile

D. M. Paton
Edmonton, Canada

PUBLISHED BY

Scriptor
Copenhagen
1976

Authors alone are responsible for the views
expressed in the Proceedings.
The mention of specific companies or of
certain manufacturers' products does not imply
that they are endorsed or recommended by the
World Health Organization
in preference to others of a similar nature
that are not mentioned.

A limited number of copies of this publication
are available for distribution from
The Human Reproduction Unit,
World Health Organization,
1211 Geneva 27, Switzerland.

Printed in Denmark
by Bogtrykkeriet Forum
Copenhagen

ISBN 87-87473-07-0

Contents

List of Participants

Dr. C. E. Adams
Agricultural Research Council
Unit of Reproductive Physiology
and Biochemistry
Cambridge, England

Dr. I. Aref
Department of Obstetrics & Gynecology
and Human Reproduction Research Unit
Al-Azhar University School of Medicine
Darrasa-Cairo, Egypt

Dr. J. P. Bennett
Syntex (US), Inc.
Palo Alto, California, USA

Dr. K. J. Betteridge
Physiology Section
Health of Animals Branch
Animal Diseases Research Institute
Ottawa, Ontario, Canada

Dr. G. Bialy
Contraceptive Development Branch
Center for Population Research
National Institute of Child Health
and Human Development
Bethesda, Maryland, USA

Dr. D. L. Black
Department of Animal Physiology
Laboratory for Reproductive Physiology
Paige Laboratory
Amherst, Massachusetts, USA

Dr. W. D. Blair
Department of Obstetrics & Gynecology
The University of Alabama in Birmingham
Birmingham, Alabama, USA

Dr. R. J. Blandau
Department of Biological Structure
University of Washington
School of Medicine
Seattle, Washington, USA

Dr. J. Brundin
Department of Obstetrics & Gynecology
Karolinska Institute
Danderyds Hospital
Danderyd, Sweden

Dr. M. C. Chang
The Worcester Foundation
for Experimental Biology
Shrewsbury, Massachusetts, USA

Dr. M. L. Chatkoff
Department of Obstetrics & Gynecology
and Biochemistry
Center for Research and Training in
Reproductive Biology
The University of Texas Health
Science Center
San Antonio, Texas, USA

Dr. S. Cheviakoff
Centro de Estudios en Biologia
de la Reproduccion
Universidad de Chile
Santiago, Chile

Dr. E. M. Coutinho
Department of Maternal Health
and Child Care
Maternidade Climerio de Oliveira
Universidade Federal da Bahia
Salvador, Bahia, Brazil

Mr. R. Crosby
Department of Obstetrics & Gynecology
Center for Research and Training in
Reproductive Biology
The University of Texas Health
Science Center
San Antonio, Texas, USA

Dr. H. B. Croxatto
Departmento de Fisologia y Embriologia
Instituto de Ciencias Biologias
Universidad Catolica de Chile
Santiago, Chile

Dr. E. E. Daniel
Department of Pharmacology
The University of Alberta
Edmonton, Alberta, Canada

Dr. J. Diaz
Departmento de Fisologia y Embriologia
Instituto de Ciencias Biologias
Universidad Catolica de Chile
Santiago, Chile

Dr. M. Doteuchi
Shionogi Research Laboratory
Shionogi & Company, Ltd.
Osaka, Japan

Dr. C. A. Eddy
Department of Obstetrics & Gynecology
and Physiology
Center for Research and Training in
Reproductive Biology
The University of Texas Health
Science Center
San Antonio, Texas, USA

Dr. E. Fromm
Department of Biological Sciences
Drexel University
Philadelphia, Pennsylvania, USA

Dr. B. Fuentealba
Departmento de Fisologia y Embriologia
Instituto de Ciencias Biologias
Universidad Catolica de Chile
Santiago, Chile

Dr. G. S. Greenwald
Department of Obstetrics & Gynecology
and Anatomy
University of Kansas Medical Center
Kansas City, Kansas, USA

Dr. E. Guiloff
Department of Obstetrics & Gynecology
Jose-Joaquin Aguirre Hospital
University of Chile
Santiago, Chile

Dr. E. S. E. Hafez
Department of Gynecology-Obstetrics
and Physiology
Wayne State University
School of Medicine
Detroit, Michigan, USA

Dr. B. J. Hodgson
Department of Obstetrics & Gynecology
and Pharmacology
Center for Research and Training in
Reproductive Biology
The University of Texas Health
Science Center
San Antonio, Texas, USA

Dr. G. R. Howe
Laboratory for Reproductive Physiology
Paige Laboratory
University of Massachusetts
Amherst, Massachusetts, USA

Dr. K. Humphrey
18 Lennox Street
Gordon, Sydney, Australia

Dr. A. Ibarra-Polo
Department of Obstetrics & Gynecology
Jose-Joaquin Aguirre Hospital
University of Chile
Santiago, Chile

Dr. J. N. Karkun
Division of Endocrinology
Central Drug Research Institute
Lucknow, India

Dr. D. Kennedy
Department of Medical Science
Neurosciences Section
Brown University
Providence, Rhode Island, USA

Dr. H. Koester
Department of Obstetrics & Gynecology
Staedtische Frauenklinik
Dortmund, Federal Republic of Germany

Dr. D. Kraemer
Department of Veterinary Physiology
and Pharmacology
Texas A & M University
College of Veterinary Medicine
College Station, Texas, USA

Dr. H. Maia
Department of Obstetrics & Gynecology
Maternidade Climerio de Oliveira
Universidade Federal da Bahia
Salvador, Bahia, Brazil

Dr. H. Maia, Jr.
Department of Obstetrics & Gynecology
Maternidade Climerio de Oliveira
Universidade Federal da Bahia
Salvador, Bahia, Brazil

Dr. J. M. Marshall
Department of Medical Science
Neurosciences Section
Brown University
Providence, Rhode Island, USA

Dr. A. H. Moawad
Department of Physiology
Karolinska Institutet
Stockholm, Sweden

Dr. T. S. Nelsen
Department of Surgery
Stanford University School of Medicine
Stanford, California, USA

Dr. C. Owman
Department of Histology
University of Lund
Lund, Sweden

Dr. D. M. Paton
Department of Pharmacology
University of Alberta
Edmonton, Alberta, Canada

Dr. C. J. Pauerstein
Department of Obstetrics & Gynecology
and Physiology
Center for Research and Training in
Reproductive Biology
The University of Texas Health
Science Center
San Antonio, Texas, USA

Dr. J. P. Polidoro
Division of Pharmacology
Ortho Research Foundation
Raritan, New Jersey, USA

Dr. C. H. Spilman
Fertility Research
The Upjohn Company
Kalamazoo, Michigan, USA

Dr. A. Talo
Department of Zoology
University of Turku
Turku, Finland

Dr. C. H. Van Nierkerk
Department of Human and
Animal Physiology
University of Stellenbosch
Stellenbosch, South Africa

Dr. M. I. Vargas
Department of Obstetrics & Gynecology
Center for Research and Training in
Reproductive Biology
The University of Texas Health
Science Center
San Antonio, Texas, USA

Dr. P. Verdugo
Department of Bioengineering
University of Washington
School of Medicine
Seattle, Washington, USA

WHO SECRETARIAT

Dr. M. J. K. Harper
Human Reproduction Unit
World Health Organization
Geneva, Switzerland

THE QUEST FOR A CONTRACEPTIVE METHOD FOR THE REGULATION OF OVUM TRANSPORT

In 1972, the World Health Organization launched a major research programme directed toward development of safe, acceptable, and effective methods for the regulation of human fertility.

Although presently available methods are considerably advanced over past methods, they remain relatively crude, and fail to meet the varied requirements of consumers and services in different countries, particularly developing ones. For these reasons, what has become known as the WHO Expanded Programme of Research, Development, and Research Training in Human Reproduction aims at improvement of existing methods of fertility regulation, assessment of their suitability in different populations, and development of new technology.

A major portion of the research effort is conducted by multidisciplinary, multinational collaborative Task Forces working in priority areas identified by the Advisory Group to the Expanded Programme. Initially, a review of the state of knowledge current in the particular field is made, and various approaches to the development of new methods of fertility control are discussed: a strategic plan is then developed that includes definition of short-term, intermediate, and long-term objectives. The steps by which the objectives can be achieved and initial estimates of the time and costs involved are identified. After approval by WHO, scientists who can make contributions to the research are invited to participate. All research projects are assessed on technical and ethical grounds by the Task Force and by an independent Review Group; those that are approved are supported by WHO.

The Advisory Group made the following statement at a meeting in January, 1972:

"It has been repeatedly shown, mainly in animal studies, that post-ovulatory fertility control can be achieved by interference with ovum transport in the Fallopian tube, and by altering implantation mechanisms in the uterus by

non-steroidal and steroidal compounds. Accordingly a Task Force which included research on the reproductive processes involved, on pharmacological models, on contraceptive screening, and on clinical work where feasible in this area, could accelerate the development of post-ovulatory anti-fertility agents for human use. More specifically, such a Task Force would concern itself with components such as: (a) tubal events, e. g. ovum transport and development, and the hormonal, metabolic and pharmacodynamic milieu in which these events occur; (b) the uterine events, particularly around the time following implantation; e. g. development and differentiation of the blastocyst and the hormonal, metabolic (enzymatic, osmotic and ionic) and haemodynamic changes in the endometrium related to the implantation of the blastocyst; (c) compound synthesis based on research on tubal and uterine events and systematic "structure" activity relationship studies, for animal screening of potential post-ovulatory fertility regulating agents; and (d) clinical pharmacological studies where possible."

As a result the first meeting of a Task Force on Methods to Regulate Ovum Transport and Implantation was held in March, 1972, in Geneva. At this meeting, 11 scientists from 7 countries, and 4 members of WHO secretariat met to prepare a plan of action for the Task Force.

The group emphasized goal-oriented clinical problems, and recognized that chances of obtaining applicable results from existing animal models were remote. However, pertinent animal studies, especially in cases where human experimentation was not possible, were considered profitable.

Priority research areas were identified under three broad headings: (1) regulation of implantation, (2) regulation of events in the oviduct, and (3) intravaginal delivery systems for release of microdose progestins and other agents. This last area was considered a priority area by the participants in this meeting, although it was recognized that the mode of action of such a system could be not only on ovum transport and implantation, but also on sperm transport in the female reproductive tract.

With specific respect to the regulation of events in the oviduct, the following recommendations were made:

"The objective of this Task Force group is to develop a variety of fertility regulating agents and methods which interfere with fertilization and/or transport of the fertilized ovum.

Fertility regulation may be achieved by interference with the transport and metabolism of the fertilized ovum in the oviduct. However, there is insufficient knowledge concerning the factors that control normal oviductal motility and ovum transport. It is proposed to obtain information on such factors in untreated women and in women using various drugs for post-coital contraception. It is also proposed to recover the fertilized human ovum from the uterine cavity and to estimate the time required for this transport under normal cir-