

# Meetings

## Gastrointestinal Electromyography

Gastrointestinal disease is known to be the third commonest cause of illness in the United States and of even greater importance in other countries. In order to bring together basic scientists and clinicians interested in the study of electrical activity of smooth muscle with particular reference to the investigation of disease of smooth muscle of the alimentary tract in man, a seminar on the Clinical Application of Smooth Muscle Electromyography was held at the Center for Cultural and Technical Interchange between East and West of the University of Hawaii on 16–20 December 1968. The intent of the organizers of this meeting was to provide an opportunity for all participants to acquaint themselves with each other's work and to provide a framework for free and open discussion of problems, a forum for presentation of new material, and suggestions of avenues for further investigation.

Discussions on the importance of disease of smooth muscle (motility disturbances) within the spectrum of gastrointestinal disease pointed out the present insufficient understanding of the pathophysiology of the diseases of motility of the gastrointestinal tract. A series of papers outlining the current concepts in electrophysiology and mechanical activity of the smooth muscle of the gut were given accompanied by surveys of the field of excitation-contraction coupling and the function of slow waves in the coordination of mechanical activity.

The papers of A. Bortoff (State University of New York, Syracuse) on the "Function of intestinal slow waves in coordinating mechanical activity" and of E. E. Daniel (University of Alberta) on "The electrical activity of stomach and upper intestine as a determinant of mechanical activity" both provided new information concerning the relationship of recorded electrical potentials to the fundamental electrical and mechanical events of the single cell and to whole organ physiology.

Some electrical events in circular

muscle of cat colon (J. Christensen, University of Iowa) were shown by a series of recordings from the smooth muscle of the cat colon; the recordings illustrated that the regular slow electrical potentials can be regularly recorded from the circular muscle but that the longitudinal muscle is largely quiescent. In addition, these in vitro studies showed a reverse gradient of natural or intrinsic frequency of the circular muscle specimens removed from different sites of the colon. The proximal colon segments were slower than the distal segments.

The clinical studies on gastric electromyography (S. Kohatsu, Stanford University; Y. Tanaka, Jikei University) were of particular interest. These studies demonstrated, with different methods, that the gastric potential can be recorded sufficiently well from man to carry out an analysis of the fundamental rate of electrical activity. Both investigations defined a normal rate and rhythmicity of the gastric electromyogram and showed preliminary evidence that change in rate is a significant parameter of gastric function and that characteristic rate patterns follow feeding and insulin hypoglycemia. A clinical study of action potentials of the rectum and terminal colon (K. Matsuoka, Osaka University) showed a distinct difference in appearance of the recordings of electrical activity from smooth muscle of the contracted segment of a congenital megacolon as compared with recordings from normal subjects.

The general impression was that current knowledge of the electrical and mechanical physiology of the smooth muscle of the gut is sufficiently developed to interpret meaningfully the results of studies in man. The preliminary results from the studies of normal humans and patients reported were encouraging and should be expanded. It was felt that present clinical methods and techniques were adequate for continued study but the realization of improved, more powerful methods will be welcomed by all investigators. A few pleas were heard for standardiza-

tion of terminology which could avoid many difficulties if carried out before gastrointestinal electromyography comes into wider use as a diagnostic tool.

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## Uterine Cervix

The North American Conference on Fertility and Sterility was held in Ocho Rios, Jamaica, West Indies, 3–12 January 1969. The meeting was under the auspices of the U.S. Division of the International Fertility Association. Six sessions were organized: tubal factors in infertility, including surgical techniques; cervical factors and nidation in infertility; problems of abortion; anti-fertility agents including intrauterine devices, psychogenic factors in infertility; and new ideas in mechanisms of reproduction. The research presented in the session of infertility included a new tissue adhesive for use in tuboplasty, spinal anesthesia for culdoscopy, and tubal occlusion by cryosurgery. Male sterilization by vasectomy clip, successfully performed in dogs, may have clinical application for reversible sterilization in man without major surgery or hospitalization (K. Omran). The papers presented in the symposium on the uterine cervix dealt with the anatomy and pathology of the cervix; and the physiology, biophysics, and biochemistry of the cervical mucus.

The role of the uterine cervix in the reproductive process is more subtle and complex than suggested by earlier investigations. The quantity and the biophysical and biochemical characteristics of cervical mucus are under endocrine control. The amount of mucus increases progressively during the follicular phase of the sexual cycle and at ovulation it is profuse and watery. During the luteal phase, cervical mucus is scant, viscous, or gelatinous and opaque. Such mucus is much less favorable for sperm survival than during the follicular phase. Cervical mucus is a complex chemical substance containing sialoglycoproteins (containing sialic acid),