

Editorial Views

Anesthesiology and Clinical Pharmacology

THE QUESTION most often asked of those of us in clinical pharmacology is: What is clinical pharmacology? I suppose it is a mark of progress that we hear this question today largely from our friends in other disciplines. A few years ago it was the question we most often asked ourselves! However, clinical pharmacology seems at long last to be emerging from its infancy with a recognizable identity. Its core activities, like those of pharmacology itself, are research and education. Clinical pharmacology units are found today in perhaps half of the medical schools in the United States. Most such units are supported only in part by the university, the bulk of their funds coming from grants from the National Institutes of Health and the drug industry. The functions and style of the units differ somewhat from university to university, but these are basically variations on the same theme. The modern clinical pharmacology unit has at its core an interdepartmental group of faculty members who identify with both basic pharmacology and clinical medicine and who participate in the usual activities of the clinical investigator and teacher.

The clinical pharmacologist likes to view himself as the drug-oriented physician. He is educated in the principles of absorption, distribution and metabolism of drugs; and he likes to teach with these principles in mind. He is concerned about mode of action, efficacy, major toxicity, subtle side-effects, etc., and his research is aimed at acquiring accurate information about these issues in man. He has a strong feeling for experimental design and for the statistical nature of biological data, but he is in most instances only an amateur statistician. Because of his disease-oriented training as a physician, the clinical pharmacologist is interested in modifications of drug action by disease, in strategies of disease management, and in drug-drug interactions in human therapeutics. The complexities of modern medicine prevent him from being a general expert

in therapeutics. He therefore tends to work with colleagues in a subspecialty or to become a subspecialist himself, and his research is usually limited to a specific field such as cardiovascular pharmacology, endocrinology, cancer chemotherapy, infectious disease, or anesthesiology.

The clinical pharmacologist in a medical school environment must be a teacher. And in this capacity he plays the role of the generalist, the scientist-physician, who offers a rational approach to therapeutics soundly based on pharmacological principles. This role demands that he be trained in basic pharmacology, that he maintain expertise on the important issues in biochemical and physiological pharmacology (hence his need for a strong base in the Department of Pharmacology), and that he have the capacity to translate this information into practical terms for medical students, house staff, and practicing physicians. In addition, he must take an interest in such matters as the epidemiology of drug reactions, drug abuse in the community, and public policy relating to drugs; he must also know something about the FDA, the hospital formulary, prescribing practices in the community, and drug advertising.

In his consulting role with patients, the clinical pharmacologist serves the usual function of the specialist; *i.e.*, he provides specific information in his particular area of subspecialty competence. Since this is a drug-oriented rather than a department-oriented activity, he leads a notably interdepartmental life and may appear, for example, in the operating room or on the pediatric service as well as in his primary clinical department (usually medicine). He soon learns that the major service he actually delivers in his consulting work is not patient care but physician education, and his major reward from this activity is intellectual stimulation and new ideas (but unfortunately not money).

A final portion of his time goes into research, and this may focus on either new or established drugs and may be done in either man or animals. Like every faculty member, he must protect this research time zealously, for the pressures of the day would erode it.

While the everyday life of the clinical pharmacologist is substantially different from that of the anesthesiologist, we have in fact much more in common than our acknowledged mutual interest in drugs. The first, and perhaps most important, area of common interest is the general posture with which our two disciplines view drug therapeutics. I think we stand together in respecting the power of drugs and in wanting to use them wisely, rationally, and conservatively. This is not an attitude which characterizes the medical profession in general, and our disciplines have a leadership role to play in correcting this situation.

Another area of common interest is our manpower situation. In spite of federally supported training programs and the rather impressive growth of anesthesiology and clinical pharmacology in the past decade, the fact remains that neither discipline is meeting its service obligations at the present time. Anesthesiology, for example, has not been able to recruit and train a sufficient number of physicians to handle patient-care needs in the United States. But neither has it developed training programs for nurse anesthetists to a high level of excellence on a nationwide basis. Clinical pharmacology, likewise, faces an extraordinary load of applied research work in view of the tightening standards for new drug evaluations and the large number of compounds available. In addition, we have hardly touched the problem of delivering adequate educational service to physicians in practice. The possibility of using pharmacists more effectively in certain educational roles in community hospitals is often discussed but seldom attempted. This is not the place to suggest solutions to these important problems, but the point is that those of us in anesthesiology and clinical pharmacology face a similar situation. We must either vastly improve our abilities for self-replication or we must get some help from well-trained non-physicians.

Yet another of our common interests is in research. I need not dwell on the importance of applying good pharmacological principles to the study of anesthetic drugs in man. This kind of research has been going on for years and has given the practicing anesthesiologist a wealth of important information about the drugs he uses. A newer and far less common research approach involves the participation of anesthetized patients in studies of drug metabolism. The surgical patient presents a unique opportunity for obtaining biopsy material for studies of the tissue distribution of drugs and their effects on hepatic enzymes. Far better use could be made of many surgical specimens than dropping them into formalin, providing we put our minds to solving some of the technical and ethical problems this kind of research poses.

In view of these many common interests, I cannot help but wonder why we do not cement more closely the professional bonds which already exist between anesthesiology and pharmacology, particularly in those schools in which anesthesiology has not yet achieved full departmental status. If clinical pharmacology can find an administrative home in the Department of Pharmacology, why not anesthesiology also? In the hospital, anesthesiology might want to remain associated with the Department of Surgery or have independent status. However, duplication of this arrangement in the administrative structure of the university has all too often left anesthesiology without certain important academic assets: curriculum time, research space, and departmental colleagues who share the drug-related research interests of anesthesiologists. Why not put anesthesiology with pharmacology, a department which already has these assets? The faculty in both disciplines, the residency program, the graduate student program, and departmental seminars all would be improved by this mutual interchange. It is a model worth thinking about.

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