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Differential Diagnosis and Management of Cough

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• Cough is a complex defensive reflex whose purpose is protection of the respiratory tract. There are many nonrespiratory causes, particularly pulmonary congestion from heart disease. Coughs may be useful, useless, or harmful. Treatment based on etiology and type of cough requires only a few medications whose efficiency has been demonstrated.

The meaning of cough as a symptom must be carefully determined before rational treatment can be planned. Recent researches on the physiology of the cough reflex, the bronchi, and the mechanisms of bronchial secretion have made it possible for a physician to plan a treatment program on a firm, scientific basis, rather than on tradition.

COUGH IS A SYMPTOM which is so frequently associated with disease of the respiratory tract that physicians may sometimes overlook the fact that cough is actually a complex reflex mechanism, and that the reflex may be initiated by many other causes. While the old descriptions *stomach cough* or *uterine cough* may seem rather fanciful today, nevertheless the terms do emphasize the fact that clinicians who used them recognized that cough frequently originates outside the respiratory tract.

PHYSIOLOGY OF COUGH

The differential diagnosis of cough requires a practical knowledge of the physiology and purpose of the cough reflex. Cough has been described by Jackson as "the watchdog of the bronchial tree" (a description which would seem particularly appropriate in a barking cough). The purpose of cough is to supplement the normal mechanisms of ciliary action and bronchial peristalsis in removing irritants, foreign bodies, excess secretion or exudates from the bronchial tree. A cough that accomplishes these functions is useful and should be encouraged. On the other hand, a cough which is the result of purely reflex action and fails to bring up exudate or secretion is useless and should be checked. It is to be remembered, however, that since many patients, particularly women and children, swallow bronchial secretions as soon as they reach the pharynx, the efficiency of a cough cannot be judged solely by the amount of expectoration.

Cough is a defensive reflex designed to keep the lower respiratory passages clear and to protect them from the entry of foreign material and stagnation of secretions. Ordinarily, these functions are accomplished by the normal physiologic defense mechanisms of the respiratory tract—ciliary action, bronchial peristalsis and the "milking" action of respiratory movements on the bronchi. Cilia are present throughout the trachea and bronchi as far as the terminal bronchioles and have a propulsive rate of about one inch per minute. This ciliary action plus normal secretion is sufficient to keep the air passages

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For information on preparation of manuscript, see advertising page 2

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EDITORIAL

Antibiotics, Skill and Judgment

"Of late, without the least pretence to skill,
Ward's grown a famed physician by a pill."

WHILE BROWSING THROUGH some old books one evening not long ago we came upon the above satirical lines from Alexander Pope. Pope's life had been a continuous round of suffering with asthma, and, having failed to find relief in treatment by the accepted physicians of his day, he succumbed to the entreaties of friends and finally employed the notorious quack, "Spot" Ward, to prescribe for him. Ward, whose success as a quack had brought him a fortune, employed a "universal remedy"—a highly dangerous compound of antimony; but in Pope's case he was entirely unsuccessful save for inspiring the thought-provoking lines quoted above.

There are many today who employ the antibiotics as a "universal remedy" much as Spot Ward used antimony in 1744, and when health is restored the beneficence of Nature is misinterpreted as the physician's skill. This injudicious use of antibiotics not only breaks faith with our professional heritage but endangers the well-being of our patients and the educational attitudes of our developing physicians.

From the outset the dramatic nature of the antibiotic drugs led to unwarranted enthusiasm for their use. This attitude was not properly dissipated by the inevitable disappointment in any panacea, for each time a stable evaluation of a given antibiotic was about to be reached a newer drug of broader antimicrobial activity was optimistically heralded. The search for new antibiotics still goes on but each discovery makes it more difficult to find a new one that has any advantages over those already in use. The consequences and harmful effects from the indiscriminate use of antibiotics are becoming increasingly apparent as the populace of our nation receives in one form or another approximately 360 tons of penicillin, 250 tons of streptomycin and 300 tons of tetracyclines and chloramphenicol yearly, not to mention erythromycin, neomycin and others. It has been estimated that at present less than 5 per cent of all antimicrobial drugs is administered on proper clinical indications. The rest is wasted on minor respiratory infections which are generally viral in origin and not susceptible to the administered antibiotic, on inconsequential infections on surface areas of the body, in illusory attempts at prophylaxis of bacterial infections, and in unnecessary combinations of drugs.

Jawetz[1] and Rantz[2] have classified the harmful results of the indiscriminate use of antibiotics into the following broad categories: (1) hypersensitivity and direct toxicity, (2) development of resistance of bacteria to antibiotics, and (3) the emergence of serious infections by organisms which were unknown previously or (4) "superinfection," presumably resulting from antibiotic-induced alterations in the normal body flora.

Hypersensitivity and direct toxic reactions can occur with any antibiotic agent. These reactions occur after either topical or systemic administration. Fortunately, most side effects are transient and subside when the offending agent is discontinued. Oftentimes this hypersensitive state has been produced by the unnecessary administration of antibiotics for an insignificant ailment, such as a cut, bruise, cold, abrasion, or minor surgical procedure; and subsequently the person who receives it for so little reason may have his welfare endangered because he cannot be given indicated antibiotic therapy at a time of serious need. Physicians must constantly guard against this misuse of invaluable agents.

Initially over 90 per cent of all strains of staphylococci were sensitive to even small doses of penicillin. At present, 50 to 90 per cent of pathogenic staphylococci, particularly those in and around hospital air

California
MEDICAL ASSOCIATION

NOTICES & REPORTS

Council Meeting Minutes

Tentative Draft: Minutes of the 408th Meeting of the Council of the California Medical Association, San Francisco, October 3, 1954.

The meeting was called to order by President Morrison, in the absence of Council Chairman Lum and Vice-Chairman Heron, in Room 210 of the St. Francis Hotel, San Francisco, at 9:30 a.m., Sunday, October 3, 1954.

Roll Call:

Present were President Morrison, President-Elect Shipman, Vice-Speaker Bailey, Secretary Daniels, Editor Wilbur and Councilors West, Wheeler, Sampson, Pearman, Ray, Sherman, Bostick, Teall, Frees, Carey, Kirchner, Reynolds and Varden. Absent for cause, Speaker Charnock, Councilors Lum, Loos, Randel and Heron.

A quorum present and acting.

Present by invitation during all or part of the meeting, Messrs. Hunton, Thomas, Gillette and Clancy of C.M.A. staff, Howard Hassard, legal counsel; Ben H. Read and Eugene Salisbury of the Public Health League of California; county society executive secretaries Pettis of Los Angeles, Foster of Sacramento, Nute of San Diego, Thompson of San Joaquin, Wood of San Mateo and Donovan of Santa Clara; Mr. K. L. Hamman of California Physicians' Service; Mr. Rollen Waterson, health insurance consultant; Dr. Malcolm Merrill, State Director of Public Health; Dr. D. H. Murray, legislative chairman; Drs. Lewis T. Bullock, Paul Hoaglund and Robert L. Smith, Jr., of the California Society of Internal Medicine, and Drs. J. Norman O'Neill, Herbert L. Joseph, J. W. Green, Burt Davis, Hunter Brown, A. E. Larsen, Edwin L. Bruck, Dan O. Kilroy and Francis J. Cox.

1. *Minutes for Approval:*

(a) On motion duly made and seconded, minutes of the 406th meeting of the Council held in Los Angeles May 8-12, 1954, were approved.

(b) On motion duly made and seconded, minutes of the 407th meeting of the Council held in Los Angeles May 12, 1954, were approved.

(c) On motion duly made and seconded, minutes of the 344th meeting of the Executive Committee, held in San Francisco July 10, 1954, were approved.

2. *Membership:*

(a) A report of membership as of October 1, 1954, was received and ordered filed.

(b) On motion duly made and seconded, 103 delinquent members whose dues had been paid were voted reinstatement.

(c) On motion duly made and seconded in each instance, 15 applicants were voted Retired Membership. These were: Wm. Whitfield Crane, Alameda-Contra Costa County; Jacob Abowitz, Burrell O. Raulston, Los Angeles County; Marie Boehm, Napa County; Bert W. Hardy, R. J. van Wagenen, Orange County; Herbert S. Anderton, George W. Getze, Merrel H. Taylor, San Diego County; Elbridge J. Best, Robert Lorentz, Mary Jones Mentzer, Emily Woelz, San Francisco County; and Edith E. Johnson and Clyde Wayland, Santa Clara County.

(d) On motion duly made and seconded in each instance, 51 applicants were voted Associate Mem-

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