Hyperactivity in Children

ORLANDO B. LIGHTFOOT, M.D.,
Chief Psychiatric Consultant,
South End Community Health Center,
Assistant Professor of Psychiatry,
Boston University Medical School,
Boston, Massachusetts

THIS paper is designed to give a general overview of a symptom complex that 1) is poorly understood, 2) is receiving increasingly more attention from both medical and non-medical personnel, and 3) has enormous medical, social and political implications for a large segment of the general grammar school population in this country and more specifically for poor people, blacks, browns and other minorities.

A psychiatric consultant to a community health center must perform the functions of both an adult and child psychiatrist. One of the problems increasingly referred within the past year has been that of hyperactivity. The referrers are teachers, parents, nurses and physicians. The child is usually a male between the ages of seven and eleven and in many respects follows the profile of the hyperactive child as outlined by Wikler, et al.[1] (Table 1).

The disturbed interpersonal relationships with other children at home and at school make the hyperactive child a person with whom it is difficult to deal.

The literature overwhelmingly favors the position that hyperactivity is a symptom rather than a syndrome or disease entity. The disorder is variously referred to as "hyperkinetic reaction",[2] "hyperkinetic syndrome" and "hyperkinetic impulse disorder". According to Fish, "hyperactivity, impulsivity, and a short attention span occur normally in the infant and young pre-school child, just as gross vocal and motor excitement is the young child's natural mode of expression of exuberance, anger or unhappiness. Better organized behavior, with more sustained and focused patterns of attention and greater ability to inhibit and control motor and affective discharge, depend on the developing integrative capacity of the childs central nervous system and the organizing experiences to which the child is exposed."[3] If this same preschool pattern tends to persist after the age of seven some concerns are voiced about immaturity and particularly after age ten this behavior is considered pathological. Fish continues to assert that hyperactivity is a symptom which can occur with mild situational reactions, severe brain damage or schizophrenia. The underlying diagnosis must be ferreted out.[3]

TABLE 1.—PROFILE OF THE HYPERACTIVE CHILD

I. At Home
1. Cannot remain still
2. Cannot conform to limits or prohibitions
3. Makes excessive demands
4. Has sleeping problems
5. Shows unwarranted aggression
6. Is general pest

II. At School
1. Is talkative
2. Fidgets continuously
3. Cannot concentrate
4. Has short attention span
5. Cannot conform to limits or prohibitions
6. Shows poor school achievement

III. Relationship with other children
1. Cannot make friends
2. Fights without provocation
3. Has poor manners
4. Is extremely bossy
5. Disregards rights of others
6. Is contantly rejected

INCIDENCE AND ETIOLOGY

The incidence of the hyperkinetic impulse disorder ranges from 3-10 per cent of the grammar school population. It is found more commonly in males. All socioeconomic classes are affected but it is more common among lower socioeconomic groups. It is often associated with epilepsy, ab-

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normalities in intellectual functioning and other neurological manifestations. The association of hyperactivity with mental retardation was detailed by Strauss and Kephart[4] in 1940 and the confusing concept of "brain injured" resulted. The broader concept of "minimal brain damage" or "minimal brain dysfunction" is now used to characterize children of normal or above normal intelligence who display several, if not all, of the following: hyperactivity, perceptual-motor impairments, irritabilty, emotional lability, general coordination deficits, disorders of attention, impulsivity, disorders of memory and thinking, specific learning disabilities, disorders of speech and hearing, equivocal neurological signs, and EEG abnormalities.[1] Because hyperactivity is frequently associated with the manifestations of minimal brain dysfunction, they are often thought to be synonymous. A more correct statement would be that hyperactivity and minimal brain dysfunction are often found together but can exist independently of each other. Laufer takes a position which tends to simplify the association between the particular psychoneurological area disturbed and the resulting symptomatology (Table 2). There are multiple connecting links between disturbed areas and their clinical manifestations. One or more can often be associated.[5]

TABLE 2.—SYNDROMES OF CEREBRAL DYSFUNCTION

Area	*Clinical Manifestations*
Neuromotor	Cerebral palsy
Neurosensory	Central blindness, deafness, anesthesia
Consciousness	Epilepsy
Communication	Dysphagias, aphasias
Intellectual	Mental retardation
Perception, association, conceptualization, expression	Specific learning disabilities
Object relations	Some forms or components of psychoses of childhood
Impulse control, motility	Hyperkinetic impulse disorder

Brain damage implies traumatic insult to the brain or more appropriately one of three general categories all of which may lead to the same syndromes 1) maldevelopment 2) damage to nervous tissue already formed or being formed or 3) malfunction without known structural change. The possible causes for the brain damage can be *prenatal* (metabolic, genetic, toxic, infectious, psychogenic), *perinatal* (prematurity, post maturity, prolonged labor, rapid labor, abnormalities of presentation, accidents of labor, medication, etc), or *post natal* (infections, injuries, toxic, metabolic, psychogenic convulsive disorders, neoplasms etc.[1-5]

The specific etiology of the hyperkinetic impulse disorder is not known. When it is related to brain damage one of the many causes listed above should be considered.

DIAGNOSIS

When approaching a child with the symptom of hyperactivity, diagnostically, it must be realized that simply stating "hyperactive child" is not sufficient. First, it must be clearly shown that the child is not simply active within normal limits for his age. There must be marked hyperactivity associated with shortened attention span, easy distractibility, and emotional lability. In addition a complete neurological examination including EEG, and the use of psychometric measures to confirm and further document the clinical findings are necessary. The neurological examination in most hyperactive children shows no "hard" neurological signs such as Babinski reflexes, dysarthria, gross ataxia or clear cut nystagmus. There are usually present a few equivocal or "soft" neurological signs which include: mild strabismus, some incoordination of gait and finger manipulation and unilateral winking defect. The EEG shows characteristically bioccipital slow waves or spike-wave complexes but almost any kind of abnormality can be found. The psychometric measures should include the Wechsler Intelligence Scale for Children (WISC), the Bender Gestalt test, and several more refined and specific tests.[6] There must be consultation with parents, nurses and teachers where appropriate. There should be an attempt to obtain a complete profile of the child's functioning: socially, emotionally, intellectually, motor, and perceptual areas. Only then can a truly accurate diagnosis be made.

TREATMENT

The first step in treatment should be to relate to the patient and family in clear nonambiguous terms the problem as determined. This clears the air and often avoids misperceptions and distortions. Until recently physicians have been able to say with confidence that the prognosis was good and that the child would grow out of it between 12 and 18 years old. In fact only recently have long term

follow up studies been performed with any degree of sophistication. Wender[7] in one report and Weiss[8] in another show that this optimism was unwarranted. They point out that in some prospective studies the more severe instances of minimal brain dysfunction (with associated hyperactivity) may eventuate in a number of psychiatric illnesses of later life including schizophrenia and sociopathy. In the five year follow up report of Weiss, "64 severely handicapped hyperactive children, most of whom had associated handicaps of minimal brain dysfunction were restudied. While the hyperactivity had diminished, other handicaps, particularly social and intrapsychic difficulties, attentional, and learning disorders persisted. . . . Children rated high for aggression at initial evaluation had a greater risk of later developing antisocial behavior. Families originally rated as more pathological had a greater risk of producing children with delinquent problems."[8]

Empathic adults, parents, physicians and teachers are crucial to the treatment process. They must recognize the need for 1) individual attention, 2) allaying anxiety and diminishing excessively stimulating environmental influences, and 3) helping to structure a predictable but manageable schedule and levels of activity at home and outside. Often behavior can be modified by rewarding desirable behavior.

Medication should be used judiciously and with careful individual tailoring. It must be carefully supervised and frequently evaluated for its short and long term effects. Fish points out that, "Drugs do not interfere with learning if the dose is regulated properly, used properly, drugs can actually facilitate the educational and psychotherapeutic aspects of treatment. Drugs (in children) are most effective in reducing psychomotor excitement. Optimally, the reduction of impulsivity and irritability is accompanied by lessened anxiety, improved attention span and more organized behavior".[9]

The amphetamines (dextroamphetamine) are the most effective minor stimulants for the symptom of hyperactivity. A tailored dose schedule up to 40 mg/day (maximum) will quiet many hyperactive children and is most effective if the underlying disorder is in the neurotic range of severity. It has been shown that the amphetamines are less effective and may even increase the symptoms of children with schizophrenia or chronic brain syndrome. Fish also points out "we still need a well controlled study comparing the effectiveness of amphetamines with mild and major tranquilizers in hyperactive children, a study in which the severity and type of the children's initial disorders and the criteria for chronic brain syndromes are spelled out in terms that everyone can recognize. Precise measures are needed to distinguish the "quieting and decreased restlessness that accompanies increased interest and persistence in academic tasks from a true decrease in the force and speed of motor activity and excitement if we are to learn which children can be helped by minor stimulants".[9] The major side effects of amphetamines are subjective discomfort, anorexia and weight loss in doses over 15 mg/day.

How or why the amphetamines help children under 11 or 12 years old is not clear. Most probably the answer lies in improved research on the hypothalamic-diencephalic area of the brain, and in our understanding of the role of brain amines —specifically catecholamines. Synder et al. point out that the central stimulant action of amphetamines is due to some combination of 1) synaptic release of norepinephrine, 2) monoamine oxidase inhibition and 3) a direct receptor action.[10] Kornetsky summarizes the data on the amphetamines by saying "an understanding of the manner in which amphetamines produce their therapeutic effect in the hyperkinetic child cannot be forthcoming from studies that only elaborate the pathological behavior. More attention must be paid to the function of the central and autonomic nervous systems and how these systems relate to the behavior of the child. Since many of the drugs that are useful in treating behavior problems in children have marked effects upon catecholamine levels in the brain, studies comparing urine catecholamine levels in various types of behavior disordered children after the administration of sympathomimetic amines might give specific direction to further research".[11]

Other minor stimulants such as Methylphenidate (Ritalin) have also been effective.

Minor tranquilizers such as diphenhydramine (Benadryl) are effective in quieting hyperactive states. After 10-11 years old children tend to respond like adults and are more sedated. Meprobamate (Equanil, Miltown) is less effective than diphenhydramine. Chlordiazipoxide (Librium) acts as a sedative in some children and produces a prominent euphoria and toxic excitement.

Major tranquilizers: Dimethylamine series (chlorpromazine) and Piperidine series (Mellalil) have both been reported useful.

Antidepressants: Recently the tricyclic agents (imipramine and the amitriptyline (Elavil) have been reported effective.[7]

Anticonvulsants and Hypnotics: Diphenylhydantoin (Dilantin) and the barbiturates have been proven consistently ineffective.

IMPLICATIONS FOR SOCIAL CONTROL

The issues that can develop around the use of drugs in an elementary school population speak well for physicians, teachers, nurses and particularly parents to shift the focus away from the individual to consider what could potentially happen to the group. We could easily lose sight of the danger to a large segment of our population if we remain simply focused on the individual. Within the past year, 1970, there has been an upsurge of interest in the use of drugs to "quiet", "control" and "redirect the energies" of more than 200,000 grammar school children in the United States receiving amphetamine and stimulant therapy, plus 100,000 children receiving tranquilizers and antidepressants and approximately 30% of all ghetto children are future candidates. These figures quoted by Witter,[12] if even remotely correct, should make all of us immediately take notice. One issue is, which group of children are the most likely candidates for drug treatment for hyperactivity and disruptive behavior? Steinberg, et al., give a fairly accurate answer. "Since dextroamphetamines improve behavior disorders in some of the children seen in psychiatric clinics, and may also improve school performance in these children, it is reasonable to wonder whether some school children who show severe behavior disorder and learning deficit but who are not, for various reasons, referred to psychiatric clinics might also benefit from d-amphetamine treatment".[13]

It should be noted that these children were not labeled disordered until after the researcher specifically asked the teachers and parents to label them. The study was performed in Washington, D. C. in an urban low income neighborhood and 72 of a total 347 students in the school were so labeled. Parents were told by a psychiatrist that their child's school work might improve and he might behave better. Forty-six subjects were used. Forty-four were black, two white, 37 male and nine female.

Black males are a target in our society in general, most black males are socially controlled either in 1) the army, 2) psychiatric hospitals, 3) jail, 4) or with drugs (heroin and methadone). Now they are targets if a teacher and a psychiatrist can convince the parents to offer them up in grade school. Kraft raises a key question when he says, "the psychiatrist can with equanimity utilize psychotopic agents with most difficulties of childhood, but usage depends on *how he does it, in what context* and *with what goal.*"[14]

Another issue is, What social institutions are best suited for social control? Consider what Stickney thinks, "Many ill children have no way to be treated unless the school intervenes . . . it may eventually occur to us that the schools are the best place to treat, as well as teach, nearly all the emotionally disturbed children." He outlines the function of a school as 1) custodian, compulsory attendance, 2) case-finding agency . . . "everyone must go to school, and the magnifying glass of the school setting will bring all things to light. Thus the school may be not only the ideal casefinding agency for disturbed children but also for all disturbed adults with school age children, if we take seriously the notion that a disturbed child is the delegate of a disturbed family".[15] Suddenly the net has widened to include adults.

There is of course nothing new in this concept of school and family intervention but it becomes quite ominous when the larger group is considered. There are other institutions that bear watching: 1) day care centers, 2) psychiatric hospitals and community mental health centers, 3) programs espousing community wide birth control, 4) social-welfare agencies that control the money in the pocket and food in the mouth.

Hopefully the panel participants in the conference on the use of stimulant drugs in the treatment of behaviorally disturbed young children in school[16] are correct in their report when they take a cautiously optimistic stance on the use of drugs in schools. I would recommend that poor people, blacks, browns and other minorities help guide their thinking and other groups interested in this question by 1) expressing continued concern to school principals, physicians and nurses about the use of drugs, 2) set up watch dog committees to oversee the social uses and abuses that could develop, 3) physicians should select special committees within their local and national conventions to

discuss and keep abreast of the current level of activity, research and social implementation, and 4) all participants on local and national committees concerning these vital issues be allowed to issue minority reports when their views become so diluted that their presence on the committee is a farce.

To paraphrase Kraft,[14] the physician can with equanimity utilize psychotopic agents . . . but usage depends on *how he does it, in what context, and with what goal? . . .*

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WILBUR COHEN URGES NATIONAL HEALTH INSURANCE ANEW

Former HEW Secretary Wilbur J. Cohen has urged adoption of a universal national health insurance plan as a "necessary and inevitable development in the United States." Now dean of the School of Education at the University of Michigan, Dr. Cohen was a key figure in the Kennedy and Johnson administrations and was one of the leading developers of Medicare. He cited widespread support of some kind of substantial reorganization of medical care in the United States.

None of the many plans under consideration contain proposals "to involve government ownership or management of hospitals, or making physicians employees of the government or of a government-type agency." National health insurance is a mechanism to focus planning and priorities for "a more intelligent distribution of the miracles of medical science to millions of our people."

Dr. Cohen holds that a universal national health insurance plan would cover a major portion of medical costs for everyone in the nation from birth to death. Essential elements of a feasible national health insurance plan covering a wide range of medical services are: breaking the barrier between the paying for health care and eligibility for service; requiring the government to contribute part of the cost; requiring the employer to pay part of the costs of health care so the immediate financial burden is not so great on the individual; assuring that eligibility for service would be determined by federal rules; providing for new, innovative, economical and efficient methods of organizing and delivering medical care; providing for expansion of preventive medical techniques; encouraging and accelerating plans for increasing health personnel; providing opportunities for the various groups in society to play a significant role in policy formulation and administration of the health system; assuring health personnel reasonable compensation, opportunity for professional practice, advancement, and the exercise of humanitarian and social responsibility; encouraging effective professional participation on the formulation of guidelines, standards, rules, regulations, forms, procedures and organization; fostering a pluralistic system of administration; and recognizing administrative reality and administrative competence.