

Management of Suicidal Drug Overdose

Andrea Marks, MD

INCIDENCE AND EPIDEMIOLOGY

Suicide is the third leading cause of death among adolescents, and yet for each fatality it is estimated that between 50 to 200 adolescents survive a suicide attempt. Most of the survivors have taken overdoses of drugs commonly found at home.

The rate of suicide attempts that do not result in death peaks in adolescence. The male to female ratio is 1/2 and self-poisoning is usually the method. In contrast, suicide fatality rates generally increase with age. Overall, suicide is the ninth leading cause of death in the United States; the male to female ratio is 3/1; and the method used most often is firearms. Clearly, suicidal behavior by adolescents is a major health problem in the United States today. The usual challenge for the pediatrician is first managing an acute drug overdose and then facilitating subsequent psychosocial evaluation of the troubled youth. The key challenge is identification of disturbed individuals and their families prior to any suicidal acts.

DIAGNOSIS AND PHYSIOLOGIC MANAGEMENT

Most young people who present with a suicidal drug overdose are not comatose; many are asymptomatic. In such situations a careful history may be obtained from the patient to determine: the events surrounding the ingestion, which drug or drugs were taken, how much, and when the ingestion occurred. The comatose patient (Table 1), especially if accompanied by someone without clues as to the cause of coma, must first have vital functions (airway, ventilation, circulation) meticulously examined and attended to, prior to attempts to determine the etiology of the coma. Following these emergency measures, a brief past medical history from a relative or friend,

careful physical examination, chemical analyses of blood and urine, toxicologic screening and quantitative tests, and therapeutic trials with 50% glucose and naloxone hydrochloride (Narcan, a narcotic antagonist), will often elucidate the cause of the coma.

Findings on physical examination may be nonspecific, but can lead to a diagnosis of drug overdose, and even point to a specific class of poisons. The patient's level of consciousness, breathing pattern, heart rate, blood pressure and pupil size will frequently provide clues (Table 2). Coma itself is likely with ingestions of salicylates, sedatives (barbiturates, benzodiazepines, phenothiazines), narcotic and narcotic-like drugs (propoxyphene, pentazocine, diphenoxylate hydrochloride), anticholinergic agents (tricyclic antidepressants), and cholinergics (anticholinesterases). Hyperventilation is characteristic of salicylates and sympathomimetics (amphetamines and ephedrine); hypoventilation is characteristic of sedative or narcotic toxicity. Tachycardia and hypertension suggest sympathomimetic or anticholinergic poisoning, whereas bradycardia and hypotension suggest sedative, narcotic, digitalis, or cholinergic toxicity. Marked dilation of pupils is consistent with overdoses of anticholinergics, sympathomimetics, or glutethimide, whereas constriction of pupils is seen with overdoses of narcotics, barbiturates, cholinergics, phenothiazines, or alcohol. Most suicide attempts by adolescents involve overdoses of sedatives, salicylates and/or narcotic-like agents.

If the history, physical examination, or laboratory tests suggest or confirm that a drug overdose has occurred, prompt medical management is mandatory even for the patient minimally symptomatic at the time of presentation (Table 2). Management includes (1) careful moni-

EDUCATIONAL OBJECTIVES

Manage a teenage patient who has attempted suicide with a drug of unknown type.



Dr Marks is Chief of the Division of Adolescent Medicine at North Shore University Hospital (affiliated with Cornell), Manhasset, New York.

TABLE 1. Management of acutely comatose adolescent

Give emergency attention to vital functions: airway, ventilation, circulation

Determine etiology of coma

1. Past medical history
2. Physical examination
3. Chemical analyses in blood and urine (BUN, electrolytes, sugar, liver function tests, blood gases)
4. Toxicologic tests (blood, urine, vomitus)
5. Therapeutic trials (50% glucose, Narcan)

If drug overdose confirmed or suspected

1. Monitor vital signs
2. Minimize systemic absorption
 - emesis induction
 - gastric lavage (after intubation, see text)
 - activated charcoal
 - cathartic
3. Enhance renal excretion
4. Systemic antidotes, if indicated

TABLE 2. Physical Signs of Drugs Commonly Overdosed on by Suicidal Adolescents

Coma—salicylates, sedatives, narcotics, anticholinergics, cholinergics

Hyperventilation—salicylates, sympathomimetics

Hypoventilation—sedatives, narcotics

Tachycardia/hypertension—sympathomimetics, anticholinergics

Bradycardia/hypotension—sedatives, narcotics, digitalis, cholinergics

Dilated pupils—anticholinergics, sympathomimetics, glutethimide

Constricted pupils—narcotics, barbiturates, cholinergics, phenothiazines, alcohol

toring of vital signs, including the patient's state of consciousness, pulse, blood pressure, respirations, and urine output, (2) minimizing systemic absorption of toxic substances by means of emesis, gastric lavage, local antidote treatment, and acceleration of gastrointestinal elimination, (3) enhancing renal excretion of the drug or its metabolites, and (4) in certain instances, using systemic antidotes in an effort to alter toxicity.

Liquids and weak acids (eg, barbiturates) are most rapidly absorbed; enteric-coated capsules or drugs that slow gastrointestinal motility (eg, narcotics, anticholinergics) are absorbed more slowly. Ipecac-induced emesis is preferred for the alert patient. An adolescent should receive 30 ml of ipecac with 0.5 liter of clear liquid and be kept in motion. This procedure may be repeated one time if emesis hasn't occurred after 20 minutes. If the patient is obtunded, or may become obtunded within the 15- to 20-minute action time of ipecac, or if the patient is convulsing, emesis should not be induced, due to the danger of aspiration pneumonia. In such patients gastric lavage may be used. If the patient has a sluggish gag reflex or is convulsing, lavage should only be performed after intubation of the trachea with an inflated cuffed tube.

Following attempts at removal by emesis or lavage, activated charcoal (30 gm in an adolescent) may be administered orally in flavored water or by nasogastric tube. It will effectively bind a vast array of poisons if administered within an hour of ingestion. A cathartic such as magnesium sulfate (20 ml of 50% solution) will enhance intestinal elimination of toxins and is especially useful if the overdosed drug causes decreased intestinal motility.

Enhanced renal excretion of toxins and their metabolites may be accomplished by forcing fluids orally or intravenously, with diuretics, and by producing urine alkalization with bicarbonate (eg, for salicylate or barbiturate overdoses) or acidification with ammonium chloride (eg,

for amphetamines) to inhibit renal tubular reabsorption. Of the various systemic antidotes that are available, naloxone hydrochloride (Narcan) is one of the safest and most often used, due to the relatively high incidence of narcotic and narcotic-like drug ingestions by adolescents. The reader is referred to his local poison control center or general toxicology textbook for more detailed discussion of the treatment of specific drug overdoses.

PSYCHOSOCIAL MANAGEMENT

The principles of immediate medical management of a drug overdose are essentially straight forward and noncontroversial. However, there is lack of agreement as to the optimal approach to the acute psychosocial management of the estimated 1 million adolescent suicide attempt survivors seen in the United States each year. These young people appear to be part of a heterogeneous group, differing widely in the extent and nature of their psychopathology and the seriousness of their intent to die. Medical hospitalization is, of course, mandated for the adolescent at physiologic risk. Our experience has been, however, that most female adolescents and about half the male adolescents present in normal physical condition or with minimal compromise such as lethargy, tremulousness, or agitation. For such adolescents treatment practices range from immediate psychiatric hospitalization to discharge from care following a brief emergency room or office evaluation.

For the past ten years, it has been our practice to admit all teenagers presenting to the emergency room or outpatient service following a suicide attempt to a general adolescent inpatient unit. This approach allows for ongoing treatment and observation of physiologic and psychologic disturbances, separation of the teenager from the environment that generated the suicidal behavior, and evaluation of the patient's subsequent psychological and social needs to take place over several

days. Hospitalization is also a statement to the adolescent that we are taking his overdose very seriously. A brief stay (mean has been six days) on a general unit provides the opportunity to delineate an appropriate disposition, based upon individual needs, and to mobilize supportive family and professional services to meet the crisis. Careful planning and decision-making by pediatrician, psychiatrist, and social worker are optimized by such a hospitalization, and are difficult to achieve during a brief and stressful office or emergency room contact. Significantly, few patients (12%) have required transfer to inpatient psychiatric facilities due to unrelenting suicidal ideation. Most patients adapt rapidly to the milieu, experience a lifting of depression and anxiety, and are ultimately discharged home to be followed by a psychotherapist and/or pediatrician.

The design of a management approach to a problem requires an understanding of its etiology, and most especially the present and future requirements inherent to its solution. Suicidal behavior by adolescents should be addressed as a unique health problem; that is, it is not necessarily analogous to suicidal behavior by adults. The very high ratio of suicide attempts compared to suicide deaths among adolescents indicates that the lethality, or likelihood to result in death, of their suicidal behavior is generally low. In some cases low lethality is due to misconception or miscalculation of how much self-abuse is needed to cause death. Other times lethality is low because the teenager does not seriously intend to die. However, lethality and intent do not necessarily correlate. In our experience most of the teenagers who required transfer to inpatient psychiatric units for unrelenting suicidal wishes, presented in normal or minimally compromised physical condition. Conversely, many of the comatose patients awoke grateful that their lives had been saved.

Most teenagers who attempt suicide are depressed, but the suicide

attempt may be acting out a feeling other than hopelessness or desire for death. Among adults, hopelessness, and not depression per se, has been shown to correlate most with seriousness of intent to die. Teenagers are less prone to hopelessness than are adults, and among adolescents a variety of other causes for suicidal behavior have been observed. The suicide attempt may be a last ditch cry for help by an adolescent who has been unable to mobilize support by other means. Suicide may be an expression of anger and punishment (generally directed toward a parent), or a manipulative act, or in response to overwhelming sadness, a sense of abandonment, or inner disintegration. Occasionally suicide is an attempt to be reunited with a loved one who has died.

Characteristically the suicidal act is a culmination of longstanding severe clashes between parent(s) and child within a stormy, unstable family. Teicher has described a "period of escalation" of problems associated with the new issues introduced with adolescence. Finally a precipitating event occurs which symbolizes for the adolescent dissolution of any remaining resources. The precipitant may be a romantic disappointment, peer rejection, school failure, pregnancy, legal entanglement, or exacerbation of intrafamilial communication barriers. The troubled teenager who is prone to acting out, impulsivity, and feelings of omnipotence may react by taking a drug overdose. The pediatrician may first enter the scene at this juncture.

SUICIDE PREVENTION AND THE PEDIATRICIAN

All adolescents who attempt suicide are at risk for recurrent suicidal behavior and require a thorough psychosocial evaluation, with the involvement of a psychiatrist, aimed at identifying and alleviating existent problems. It is not always possible to predict which adolescents are most likely to try suicide again, but risk factors for recidivism include a

high degree of precaution taken to avoid rescue in the original attempt, inability to improve upon social incapacitation, inadequate parental response, and depression associated with low self-esteem.

Depression as an emotional state of children and adolescents is less well recognized and defined than it is in adults. Characteristic signs are different than in adults. Components of depression include sadness, guilt, and shame. For the child or adolescent these feelings generally arise from early loss of or rejection by a parent, associated with repressed hostility and ambivalence toward the unavailable person(s), and a sense of unworthiness and being unloved.

Depression during adolescence ranges from normal mood swings as a developmental phenomenon to an association with schizophrenia. Depression may be reactive to a current loss or chronic since childhood. Manifestations range from apathy and withdrawal to garrulous and aggressive behavior. The depressed adolescent may be sullen and unkempt, immersed in primarily studious pursuits, affectionate only to pets, have very few or no friends, and because he or she does not make waves, go unnoticed; or the depression may be masked by loud and difficult behavior including tantrums, truancy, running away, delinquency, promiscuity, and drug abuse.

Adolescence is a difficult time for anyone, but the depressed adolescent will have special difficulties negotiating the usual developmental tasks of adolescence. These tasks include establishing independence from parents, feeling at ease with one's gender role and sexuality, and initiating plans toward becoming a contributing member of society. Significant depression and its concomitant feelings of powerlessness and unworthiness may halt or retard already faltering efforts with these developmental steps toward a solid adult identity, thus compounding the adolescent's already low self-esteem.

Predicting a repeat or initial sui-

Suicide

cide attempt requires vigilance by the physician for signs of serious depression. If depression is suspected, the physician must try to establish a talking relationship with the adolescent. Such a relationship will facilitate inquiry into the social adjustment (family relationships, peer activities, and school performance) and mood (including any suicidal thoughts) of the adolescent, and provide an important lifeline for someone who may be nearing a sense of abandonment in all other interpersonal ties.

A physician is frequently contacted by a patient within weeks before a suicide attempt, usually with a physical complaint for which no cause is apparent. cursory reassurance at such visits, without attention to the psychosocial context of the individual, may result in missing an opportunity to uncover and intervene in a serious depression with impending suicidal thoughts. Risk factors for suicide potential that should alert the physician include a history of unexpected separation or loss during childhood, parents or friends who have attempted suicide, excessive present difficulties with a biologic or stepparent, academic or behavioral problems, recent stress such as a change in neighborhood or school, illness, or death in the

family, or any of the more immediate precipitants of suicide noted earlier.

Follow-up care of the troubled adolescent, after a suicide attempt or prior to any overt acts but when suicide potential is feared, should include consultation with a psychotherapist. In most instances, individual and/or family psychotherapy will be recommended. On occasion therapists will utilize antidepressants such as imipramine or amitriptyline as an adjunct, although the use of such medications for adolescents has not been well studied.

In addition to managing the acute drug overdose and coordinating a psychosocial evaluation following a suicide attempt, the pediatrician should remain a lifeline for the adolescent. This would include maintaining a relationship for medical services, encouraging ongoing psychotherapy for the patient and his family, and helping to facilitate changes in school, work, or recreational spheres. Some families cannot alter their behavior or respond adequately to their child's problems, and in these situations it may become imperative to consider alternative residential settings such as foster care, group homes, or boarding school. Finally, the pediatrician must remain alert to any recurrent difficulties that may arise. Only then

can preventive measures be taken early enough to interrupt the progression of events that end in suicide.

RECOMMENDED READING

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EDUCATIONAL OBJECTIVE

Manage an adolescent with hepatitis, including giving appropriate advice to school health authorities.

Abstract

Multiple Hepatitis Viruses in Multiple Attacks of Acute Viral Hepatitis. Mosley JW, et al. *N Engl J Med* 296:75, 1977.

In studying large numbers of patients with viral hepatitis, over the course of years, some patients were readmitted with second, third, or fourth episodes of acute hepatitis. Thirteen patients with 30 bouts were identified. No patient had more than one episode of hepatitis A, or hepatitis B. Sixteen episodes were "non-A, non-B" (and were not caused by cytomegalovirus or infectious mononucleosis). At least one and perhaps two additional agents cause the clinical syndrome of acute hepatitis.

Comment: It has now become quite clear that there are at least three and perhaps four agents capable of causing typical acute hepatitis. Despite major breakthroughs in our understanding of the etiologies of hepatitis, there are still major gaps in our knowledge. Gamma-globulin prophylaxis is probably effective for all types. (R.H.R.)

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