

## Sex Offenders: A Biomedical Perspective and a Status Report on Biomedical Treatment\*

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Individuals may be considered sex offenders if they behave in particular ways, for example, by becoming sexually intimate with a child. In general, behavior, whether sexual or nonsexual, is a reflection of one's state of mind, as persons tend to act in response to their thoughts and feelings. Some states of mind can be considered pathological, for example, when an individual loses the capacity to determine whether heard voices are coming from the environment or are imaginary. This type of psychological impairment can occur in a variety of psychiatric syndromes such as schizophrenia, dementia, delirium, or manic depressive illness, each of which requires a different form of treatment. Persons mentally ill in these ways sometimes commit sex offenses. On the other hand, some persons commit sex offenses in response to intense, unconventional sexual hungers (e.g., for children). Individuals with deviant or unconventional sexual orientations may also require psychiatric help. Properly diagnosing whether a sex offense is the manifestation of a specific psychiatric syndrome such as schizophrenia, dementia, mania, exhibitionism, or pedophilia can be important in trying to provide optimal care. The etiological determinants of conventional, as well as of unconventional, sex offenses are undoubtedly multiple, but there is evidence that biological factors such as hormone levels or chromosomal makeup sometimes play a major contributory role with respect to the nature of an individual's sexual desires. Biological treatments which alter the physical milieu of the brain, for example, by increasing the amount of the "male sex hormone" testosterone that is present, may sometimes be able to facilitate better self-control of sexual behavior. This, in turn, might be the case, for instance, if treatment that lowers testosterone levels results in a reduction of sexual desire, or if treatment that increases testosterone levels results in a reduction of sexual desire. There may be implications regarding how society through its laws should view some sex offenders if (a) it is the case that biological factors, such as

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chromosomal abnormalities, contribute to the development of unconventional erotic desires that may tempt persons to want to commit sex offenses, and if (b) it is also the case that surgical or antiandrogenic medication treatments can result in biological and psychological changes that provide such individuals with an increased capacity for self-control not previously present.

### PART I: SYNDROMES AND THE IMPORTANCE OF DIFFERENTIAL DIAGNOSIS

#### Introduction

The present chapter discusses the importance of making a proper differential diagnosis in assessing "sex offenders" for penitential treatment. It also explores the relationship between biological factors, such as hormone levels or chromosomal anomalies, and sexual phenomenology (i.e., the mental experiences, thoughts, lusts, and fantasies that constitute states of erotic desire). Currently available treatments are briefly reviewed from a biomedical perspective, with a particular emphasis on the use of surgery and medications. The idea of using pharmacological agents to treat sex offenders is relatively modern, although surgical procedures such as castration which, like some medications, diminish androgen levels have been employed for this purpose for quite a while. The following is a brief case vignette which serves as an example of the type of patient for whom medication treatment may be appropriate, as well as a basis for the subsequent discussion of the various issues and considerations, diagnostic and otherwise, which must be reflected upon in trying to provide optimal understanding and care.

#### Case Presentation

Mr. A., a 40-year-old white male, was referred by his attorney for assessment consequent to the patient's sexual involvement with a 13-year-old boy. Having been charged five years earlier with a similar offense, at the time of his assessment the patient was on court-mandated probation. Though apprehended only once before, he had been sexually active almost exclusively with young males, most ranging between the ages of 14 and 17 (but some as young as age 8), since he himself was 7 years old.

Sexual activity, which included undressing, fondling, mutual masturbation, and oral-genital contact occurred frequently with a variety of partners, sometimes as often as several times per month. In almost all cases the children were persuaded rather than coerced, but in two instances, while intoxicated, Mr. A. threatened the victims with a paring knife. The patient indicated that he had begun to drink frequently "to get up the courage to approach potential partners."

After each incident the patient felt ashamed and guilty, vowing that he would try not to do it similarly in the future. However, in time, as his sexual urges began once again to intensify, he would give in to temptation. The mere happenstance of watching young boys in television commercials would sometimes elicit a strong urge to focus his attention towards the child's genital area. In describing the mental experiences that led him to act in these ways, the patient, in an interview with Dr. John Money, made the following comments:

If I have seen an exceptionally nice looking boy I get aroused. I want to go over there, but then again I don't. I see him, and I want to get out of there because I know I am going to start fantasizing. I have noticed that the first thing is I drop my eyes to his genitals. It gets more intense, the fantasies, that is. I dream about a South Sea island, nothing but boys on the island. It is kind of like a fight between the good side and the bad side, like Dr. Jekyll and Mr. Hyde. Sometimes the way to cure it is to masturbate, and that takes care of it. There are other times when I get so aroused I just have to get it sexually together. It worries society. It worries me very much. I know it is wrong. I know what the legal issues are, but at the time I am not thinking of legal issues. All I can think about is getting the boy. I want to keep doing it, and doing it, and doing it. No matter how. Getting the boy. Sometimes I think, "Hey, what are you doing? I don't want to hurt anyone." I really do not want to hurt these children, but I am very afraid that I might.

In attempting to understand his condition, the patient made the following comments:

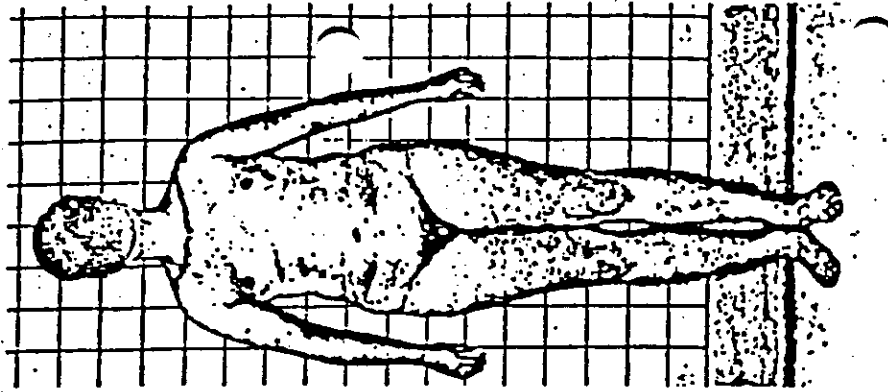
What starts a person like myself doing what I do? Why me? Why can't I be normal like everybody else? You know. Did God put this as a punishment or something towards me? I am ashamed. Why can't I just go out and have a good time with girls? I feel edgy when a female is present. An older "gay" person would turn me off. I have thought about suicide. I think after this long period of time I have actually seen where I have an illness. It is getting uncontrollable, to the point where I can't put up with it anymore. It is a sickness. I know it's a sickness, but as far as they [society] is concerned, you are a criminal and should be punished. Even if I go to jail for 12 or 15 years, or whenever, I am still going to be the same when I get out.

This last statement was not meant to be defiant.

Physical and laboratory examination of the patient revealed a number of biological pathologies (see Table 5-1). These findings suggest that the patient has Klinefelter's syndrome, the significance of which will be discussed subsequently.

Table 5-1. Abnormal Physical and Laboratory Findings on Mr. A.

Physical Findings:	Weight (kg)
1. Scars on chest from previously performed bilateral mastectomies, done because of gynecomastia (enlarged breasts) which developed at puberty	190
2. Hypogonadism (small testicles)	180
3. Abnormally long arms and fingers	170
140	
Laboratory Findings:	130
1. Low sperm count	120
2. Elevated luteinizing hormone (148 ng/ml); normal LH in adult males = 30-64 ng/ml	110
3. Elevated follicle stimulating hormone (618 ng/ml); normal FSH in adult males = 98-276 ng/ml	90
4. Low testosterone (153 ng/100 ml); normal (s.d. = 2) range in adult males = 275-875 ng/ml	80
5. 47 XXY chromosome pattern; normal male pattern = 46 XY	70
	60
	50
	40
	30
	20



Typical patient with Klinefelter's syndrome. Note the gynecomastia and female distribution of adipose tissue. (Photo courtesy of Dr. John Money.)

### Pedophilia as an Example of a Diagnosable Sexual Deviation Syndrome

The case just presented is an example of homosexual ephebophilia, which means that the patient is a man whose sexual orientation, interests, and preferences are directed predominantly towards postpubertal boys. Were he interested mostly in prepubertal boys, a diagnosis of pedophilia, rather than ephebophilia, would be more accurate. For purposes of the present discussion, the term pedophilia will be used when referring to persons sexually oriented towards children, regardless of whether the children are pre- or postpubertal.

According to the 3rd edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM III), there are three criteria which must be satisfied in order to

make such a diagnosis.<sup>1</sup> First, it is necessary to establish that the patient becomes sexually excited by the act or fantasy of engaging in sexual activities with children. Secondly, if the patient is an adult, rather than an adolescent, the children must be at least ten years his junior. Finally, it must be clear that any sexual acts engaged in with children are not either due to other mental disorders such as schizophrenia, dementia, or drug intoxication, or due to lack of an suitable age-appropriate partner, which occurs in some cases of incarceration or incest.

As is true of persons with conventional heterosexual interests, the onset of sexual behavior in persons with unconventional, or "deviant," erotic desires usually begins around the time of puberty. Related fantasies, however, may have been experienced much earlier. In the absence of appropriate treatment, the course of such syndromes tends to be chronic, which is not surprising because the sex drive is maintained over time.

In terms of reported cases, pedophilia appears to be almost exclusively a male problem, although its exact prevalence is unknown. The majority of cases in the literature have involved heterosexual pedophilia (men attracted towards little girls), but more recently some centers have reported a higher frequency of homosexual involvements.<sup>2</sup> In ancient Greece, homosexual pedophilic behavior was considered acceptable. Socrates, for example, wrote, "A valued company might be composed of boys and their lovers . . . for of all men they would be ashamed to desert one another."<sup>3</sup> Judeo-Christian beliefs, however, based in part upon the biblical story of Sodom and Gomorrah (hence, the term sodomy), clearly consider it to be immoral.<sup>4</sup> In some states, a possible legal sentence for engaging in sex with a minor is the death penalty.<sup>5</sup> Although in American society a child can clearly become quite distressed by involvement with a pedophile (hence the importance of applying effective interventions to stop such behavior), it is also the case that some children become even more upset by the reactions of well-intentioned adults who find out about their sexual involvements.<sup>6</sup> Tragically, sometimes children also feel guilty and responsible for any punishment imposed upon a former partner, a person (perhaps even a relative) whom they may actually like a great deal.

Sexual activity by pedophiles with children rarely involves physical assaultiveness and is usually the result of persuasion rather than coercion, although the series of brutal slayings in Atlanta, Georgia, during 1980 and 1981 represented an exception.<sup>8</sup> A study in Detroit, Michigan, of over 1252 sex offenses against children found that physical injury occurred in less than 9% of the cases.<sup>10</sup> When a pedophile craves sadistic sexual involvement with children, a second diagnosis of erotic sadism should also be made. Though most children are warned to be leery of strangers, the victims of pedophiles, unlike the victims of exhibitionists, usually know their partners well, and sexual activity (which is often mutual fondling and masturbation rather than intercourse) frequently occurs in the home of either the victim or the perpetrator.<sup>14</sup> Whereas some pedophiles merely lust after children, some seem to fall in love with them, which may make treatment more difficult.

Why persons differ from one another in sexual orientation and in the nature and intensity of their erotic desires is unknown. It is unclear why most men find women sexually appealing whereas some are erotically attracted towards young boys. Nor is it clear why still others experience recurring urges to expose themselves publicly or to rape repeatedly. In some instances, certain types of early childhood experiences seem to play a contributory factor in determining adult sexual interests. Many pedophiles, for example, were themselves sexually involved with adults as youngsters.<sup>11</sup> In other cases, biological pathologies such as structural brain damage, hormonal dysfunctions, genetic anomalies, or electrical disturbances of the brain seem to play a role.<sup>12,13</sup> Persons who meet the diagnostic criteria for a sexual deviation syndrome, of which pedophilia is an example, may be appropriate candidates for treatment with antiandrogenic medications.

### Diagnosing a Sexual Deviation Syndrome

The term used in DSM III to categorize sexual deviation syndromes is paraphilia, which means attraction to deviance.<sup>1</sup> Diagnosis of a sexual deviation syndrome can be made by inquiring about a person's thoughts, feelings, and behaviors. Individuals with deviant sexual interests ordinarily experience repeated erotic fantasies about engaging in unconventional forms of sexual activity. Asking an individual about his masturbatory fantasies can be revealing in this respect because erotic arousal for the purpose of masturbation may be difficult in the absence of erotic mental imagery.<sup>13,14</sup> The homosexual pedophile frequently fantasizes about young boys, whereas the heterosexual exhibitionist has recurring thoughts about exposing himself to women. The male transvestite is preoccupied with the idea of cross-dressing in female clothing. Rather than depending solely upon introspective reports, Dr. Gene Abel of the New York State Psychiatric Institute suggests that the rate of change in the diameter of the pupil of the eye can also be used as a means of determining whether a particular stimulus, such as the picture of a nude female, is sexually arousing (see Figure 5-1). Measures of penile tumescence and other polygraphic data have also been used to try to document unconventional sexual interests.<sup>15</sup>

Accompanying the unconventional sexual fantasies experienced by persons who can be diagnosed as having a sexual deviation syndrome are intense erotic cravings. These cravings are experienced as frustrating and discomforting when deviant fantasies cannot be enacted. Karl Jaspers, the eminent German phenomenologist (who was probably influenced in his thinking by Krafft-Ebing and Havelock Ellis), characterized deviant sexual cravings as intolerable states similar to addictions, that demand action in order to be alleviated.<sup>16</sup> However many persons with conventional heterosexual interests can also feel discomfort if sexually frustrated; such frustration may motivate a person to seek out a consensual sexual partner. The individual with a pedophilic sexual orientation, however

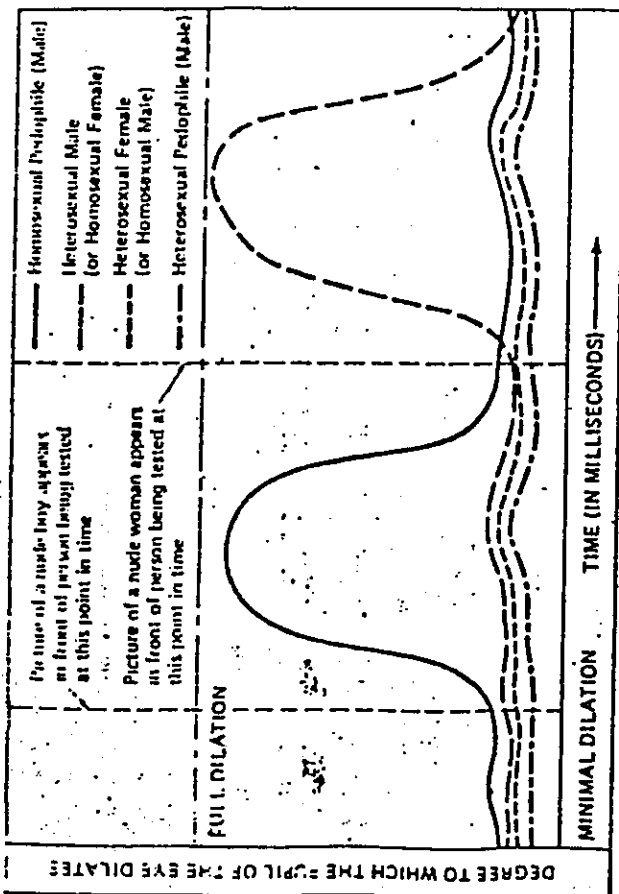


Figure 5-1 Schematic representation of the pupillary responses of four persons with different sexual orientations.

...s much greater difficulties in the sense that all those whom he may find naturally appealing (i.e., children) are forbidden as partners. Living in a world where all those who are sexually appealing are forbidden as partners must be difficult—a situation heterosexual adults can, perhaps, empathize with by imagining living in a world where one was expected to have sex only with children.

People do not decide voluntarily what will arouse them sexually. Rather, they discover within themselves what sorts of persons and activities are sexually appealing to them. Sexual behavior in general tends to be in part a response to one's erotic desires and fantasies. Thus a man with conventional heterosexual interests tends to seek out adult women, just as the homosexual pedophile (who may be impotent with women) seeks out boys. The heterosexual voyeur repeatedly seeks out situations where he can "peep" upon unsuspecting naked or partially clad females in response to his sexual cravings, whereas the male transvestite repeatedly cross-dresses.

DSM III lists nine major diagnostic subcategories of paraphilia (see Table 5-2).<sup>1</sup> A earlier, outdated classification schemes, sexual deviation syndromes were often considered to be a subdivision of the so-called sociopathic personality type. It is important to appreciate that sexual orientation can be assessed independently of character traits. Some men with unconventional sexual orientations show no other evidence of "sociopathic personality traits," such as disrespect for authority, other

kinds of criminal behaviors, truancy, vocational irresponsibility, or lack of concern for others. On the contrary, men with unconventional sexual orientations such as pedophilia can manifest a range of character traits, just as is true of persons with conventional heterosexual orientations.<sup>17</sup> Thus, terms such as pedophilia refer to the nature of a person's sexual orientation or to the nature of his sexual desires, and not to his traits of character. A paraphiliac man who has been consistently non-violent in temperament would not ordinarily be expected to undergo a sudden change in personality so as to become a physical danger to others.

Table 5-2. Major Diagnostic Subcategories of Paraphilia.

1. Pedophilia
2. Exhibitionism
3. Transvestism
4. Voyeurism
5. Zoophilia
6. Fetishism
7. Erotic sadism
8. Erotic masochism
9. Other (includes paraphiliac or compulsive rape)

Differential Diagnosis as a Basis for Determining Appropriate Psychiatric Treatment

Many persons are referred for psychiatric assessment and possible treatment by virtue of the fact that they have behaved in a particular way (e.g., by having sexual involvement with a child) and, thus, they carry the label "sex offender." Not all sex offenses (a legal term), however, are the reflection of a sexual deviation disorder or paraphilia (a medical term). In assessing a sex offender for possible treatment, the psychiatrist or evaluator must try to ascertain (1) the state of mind the individual was experiencing that led him to act in a particular way, and (2) whether the behavior in question was the manifestation of a diagnosable and potentially treatable psychiatric syndrome.

A sex offense could represent the expression of any of a number of psychiatric conditions. Schizophrenia, for example, is a syndrome comprised of (1) delusions, which are rigidly-held, idiosyncratic, false beliefs that cannot be corrected by reason (e.g., the belief that one has a bomb inside one's head); (2) auditory hallucinations ("hearing" voices when no one is speaking); (3) disorganized thinking (in both logic and syntax); (4) insomnia; (5) agitation; (6) emotional apathy; (7) loss of initiative; and (8) bizarre behavior.<sup>18</sup> The term schizophrenia refers to the cluster of associated features comprising the syndrome and not to the person manifesting the condition.<sup>19</sup> Schizophrenia must be differentiated from other psychiatric syn-

ness such as dementia, delirium, and affective illness because delusions, hallucinations, and bizarre behavior may occur in these disorders as well. In dementia I delirium, however, delusions and hallucinations when present are accompanied by disorientation and intellectual decline, whereas in affective illness these symptoms occur within the setting of a sustained mood change. The age of onset of schizophrenia is almost always in the late teens or early twenties, and like a variety of other medical conditions (such as juvenile onset diabetes), its course is chronic. There is evidence that this form of mental illness, in which persons lose capacity to perceive accurately whether heard voices are real or imaginary, may be associated with a genetic predisposition.<sup>16</sup> Thus, schizophrenia seems to occur most frequently within certain families. An associated biological pathology may be the presence of heightened levels of various chemical neurotransmitter substances (such as dopamine) in the brain.<sup>20</sup>

Mr. B. was a patient who developed the delusion that he needed to drink the blood of women in order to remain alive. Initially, in response both to this rigid belief and to "voices telling him to do so," he sacrificed several animals and drank their blood. Subsequently, he physically assaulted several women in an effort to obtain blood from them, which resulted in his being charged with a second degree sex offense. In this case, the offense in question was clearly a behavioral manifestation of his schizophrenic condition, and his sexual orientation and erotic desires were apparently quite conventional. Appropriate treatment for the symptoms of schizophrenia includes the use of phenothiazine medications or other sorts of neuroleptic drugs.<sup>21</sup> However, just as is the case when insulin is employed to treat diabetes, present-day pharmacological therapy does not represent a complete cure for this illness.

Sex offenses can also be a reflection of other psychiatric conditions such as manic-depressive illness.<sup>22</sup> In addition to delusions of grandeur (e.g., the belief that one is Christ) and elated mood, one of the other symptoms of the manic phase is often an increase in sexual appetite. Mr. C. is a 54-year-old man who would repeatedly expose himself to middle-aged women only when in the midst of such an episode. At other times, when his mood was stable and his capacity to receive reality intact, he would never act in such a fashion. The appropriate treatment in his case, as a prophylaxis against future recurrences of this psychiatric illness (whose natural course, like asthma, is episodic rather than chronic), is lithium carbonate. When well, this patient experienced perfectly conventional erotic interests and, thus, would not satisfy the diagnostic criteria of a sexual deviation syndrome.

Sex offenses can be perpetrated by persons with conventional sexual desires and intentions while intoxicated with drugs or alcohol. Here psychological counseling (plus, perhaps, Antabuse—a medication that makes a person feel physically ill when he consumes alcohol while taking it) would likely be the treatment of choice. A chronically retarded person with conventional erotic interests who "didn't know any

better" might also commit a sex offense and possibly require counseling plus sex education. Mr. D. is an intelligent man with conventional sexual interests who began an incestuous relationship with his sister before either of them was old enough to appreciate the implications of such behavior. Here counseling to help them deal with their guilt and family concerns was the treatment employed. Finally, a self-centered, self-indulgent person with conventional sexual desires, but with no concern for the well-being of others, might also commit a sex offense. An example would be the criminal who rapes a woman in the midst of a robbery because he feels he can get away with it. Such a person might well have no diagnosable psychiatric illness, and a proper disposition might include quarantine in the form of incarceration.

### Rationale for Treatment When a Sex Offense Is the Manifestation of a Sexual Deviation Syndrome

Based upon the preceding discussion it should be clear that some sex offenses are committed by men who are not simply self-indulgent individuals with conventional erotic interests misbehaving. Unlike the homosexual pedophile, most men (including homosexual men) experience absolutely no desire to engage repeatedly in sexual involvements with young boys.<sup>23</sup> Rather, the average man would be repulsed by such an idea. Whereas the exhibitionist lusts for the opportunity to repeatedly expose himself publicly, most men would be embarrassed or humiliated at the prospect of behaving in such a fashion. Though many men might indeed turn their gaze towards a partially clad woman visible through a nearby window, few experience recurrent urges to "peep" repeatedly at the risk of job, reputation, family, and incarceration as does the voyeur.<sup>24,25</sup> The average man would feel foolish dressed in woman's clothing, whereas the male transvestite finds this erotically arousing. Although many men find themselves capable of being sexually stimulated by descriptions or scenes of coercive sexual acts, the average man certainly does not experience repeated ruminations and cravings to rape. Nor, as is the case with the paraphiliac (or compulsive) rapist, does he repeatedly have to resist the temptation to rape in order to remain out of trouble.<sup>2</sup> Thus, the assumption that paraphiliac behavior is little more than misbehavior is a conceptually invalid oversimplification. This kind of oversimplification leads to interventions that are rehabilitatively ineffectual. The recidivism rate is extremely high when punishment is the "treatment" of choice, as punishment does virtually nothing to make it any easier for a man to resist deviant sexual cravings. One hears of numerous instances in which a paraphiliac rapist, recently freed from prison on work release, has already raped again repeatedly. Quarantine, as opposed to punishment, may indeed be necessary so long as an individual poses a threat to others (as is sometimes true of some persons with contagious diseases), but if effective treatment that assures public safety can be applied, the need for isolation from the community may be obviated.

**PART II: BIOLOGICAL PATHOLOGIES AND ETIOLOGIES**  
**Klinefelter's Syndrome as an Example of a Biological Condition**  
**Predisposing towards Sexual Deviation**

A., whose case was discussed earlier, was found to have Klinefelter's syndrome. Dr. Harry Klinefelter and his colleagues described this condition for the first time in 1942 in the *Journal of Clinical Endocrinology*.<sup>26</sup> Klinefelter's syndrome is a condition characterized by (1) the development of gynecomastia (enlarged breasts) at the time of puberty, (2) aspermatogenesis (low sperm production), and (3) an increased excretion of follicle stimulating hormone (FSH) from the pituitary gland in the brain.

Normally a person without Klinefelter's syndrome has 23 pairs, or a total of 46, chromosomes—each of which contains millions of genes. One-half of each chromosome pair is obtained from the mother, and the other half from the father, at the moment of conception. Twenty-two of the 23 chromosome pairs are termed autosomes, and as far as is known they are not directly related to the determination of a body's gender appearance.

In most cases, every cell in a person's body contains a replica of all 46 chromosomes. Any cell can be obtained from an individual, prepared in a special way, and looked at under a microscope, to actually visualize them. When this is done, ordinarily by looking at a white blood cell, the chromosomes can be lined up and numbered as shown in Figure 5-2. Usually these chromosomes look the same in every cell. When this is not so, as when some cells contain 46 chromosomes but others 45, this is known as a mosaic pattern. The top part of each chromosome pair is called the p-section, and the lower part the q-section. If a chromosome abnor-

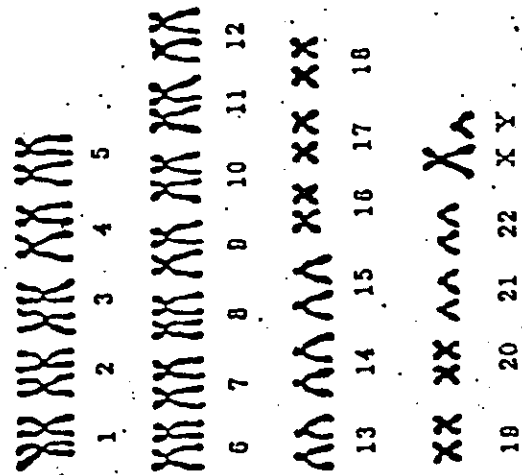


Figure 5-2. Normal male (46 XY) chromosome pattern.

mality were to consist of extra genetic material being present on the top part of chromosome pair number 9, this would be indicated by the notation 9 (p+).

If one of the 23 pairs of chromosomes looks like a small X matched with another small X, a person will look like a female at birth (barring certain medical complications).<sup>27</sup> On the other hand, if that chromosome pair looks like a small X matched with a small Y, the person will usually look like a male because the presence of a Y-shaped chromosome ordinarily instructs the body to take on a male appearance. On rare occasions, a woman may be found to have an XY rather than an XX chromosome pattern, if chemical receptors in the cells in her body lack the capacity to respond to genetic messages sent out via hormones from the Y chromosome.<sup>28</sup>

In Klinefelter's syndrome, instead of having 23 pairs of chromosomes for a total of 46, 47 chromosomes are present, one of which is an extra X. Thus, although due to the presence of a Y chromosome, the Klinefelter's child ordinarily appears to be a boy at birth; genetically speaking, the child can be thought of either as a male (XY) with an extra X chromosome or as a female (XX) with an extra Y chromosome. Although most Klinefelter's patients have only one extra X chromosome and are therefore said to have a 47 XXY karyotype pattern, some have even greater numbers of additional X chromosomes present.

Besides the XX or XY pattern, other physical indices have been used to try to ascertain biological gender. Although most women have two X chromosomes in every cell, one of these two is ordinarily partially inactivated.<sup>29,30</sup> As a result, if a cell is taken from a woman, by gently scraping the buccal surface of her tongue, and it is then properly prepared and looked at under a microscope, a clump of stained chromatin will be seen within this cell's nucleus. Lyon was the first to suggest that this "chromatin positive material," also known as a Barr body, is actually a partially inactivated and clumped up extra X chromosome.<sup>31</sup> Since the "normal" (XY) male has only one rather than two X chromosomes, he has no extra one present to clump, and thus he will test chromatin negative. The Klinefelter male, however, because he does have two X chromosomes will stain chromatin positive and thus, on the basis of this test, appear to be a female.

Another test sometimes used to identify biological gender involves looking at neutrophils, a type of white blood cell, under a microscope. Ordinarily the nucleus inside a neutrophil obtained from a woman contains a drumstick-like appendage (see Figure 5-3).<sup>31</sup> This "drumstick" is not seen in neutrophils obtained from "normal" (46XY) males, but it is seen in Klinefelter's patients.

As early as 1957, Money and Hampson suggested that sex differences can be looked at in a variety of ways besides physical appearance (see Table 5-3).<sup>32</sup> When this is done using Klinefelter's patients as an example, it becomes clear that questions as to whether an individual is a man or a woman, and questions about what sexual orientation and gender identity should be, become much more difficult to answer than is ordinarily appreciated. Because Klinefelter's patients are born looking like males, their parents naturally enough routinely assign them a male sex role, and they are raised as boys. However, in terms of gender identity, some of

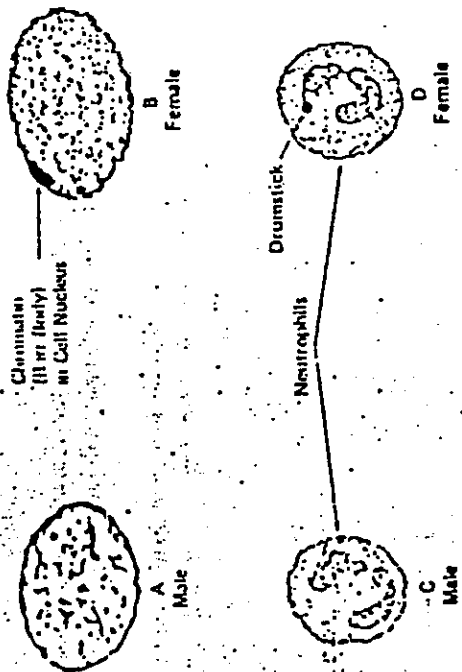
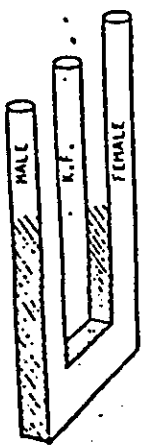


Figure 5-3. (A) Cell nucleus from buccal smear of "normal" male. (B) Cell nucleus from buccal smear of "normal" female. (C) Neutrophil from "normal" male. (D) Neutrophil from "normal" female.

Table 5-3. Male versus Female Sexual Characteristics in Klinefelter's Patients.

	IN KLINEFELTER'S SYNDROME (K.F.)
1. Sex of assignment and rearing	Male
2. Feelings of gender identity	May be male or female
3. (a) Sexual orientation (b) Sexual behavior	May be towards members of the same or opposite sex (which sex is the opposite sex in K. F. syndrome?)
4. External anatomical sex (phenotype)	Male at birth; then becomes both male and female (e.g., enlarged breasts) at puberty
5. Hormonal sex	Hormonal profile (of testosterone, FSH, and LH) is similar to postmenopausal females
6. Gonadal (and internal anatomical) sex	Male, but hypogonadal
7. Chromosomal sex (phenotype)	Male/female — karyotype (XXY) Female — Barr body Female — neutrophilic drumstick



them, as early as age 7, have felt themselves psychologically to be girls.<sup>33</sup> Dr. John Money described the case of an otherwise normal 8-year-old boy brought for psychiatric assessment by his frustrated parents because he insisted he felt more comfortable dressed in girls' clothing. Chromosomal analysis revealed that he had Klinefelter's syndrome. As demonstrated by the case of Mr. A. discussed earlier, a number of Klinefelter's patients are sexually attracted to little boys rather than to members of the opposite sex, but in some ways it is unclear which sex is the opposite sex when it comes to Klinefelter's syndrome. Why some Klinefelter's patients find children rather than adults appealing is unclear. It is clear, however, that the sight of an infant usually elicits some feeling (albeit asexual) in most people. The possibility that feelings towards children (including the so-called maternal instinct) may be at least partially influenced by genetic factors cannot be excluded.<sup>34</sup> Although body phenotype is masculine during childhood, 80% of Klinefelter's patients grow large breasts and develop a "female distribution of adipose tissue" at the time of puberty (see Table 5-1).<sup>35,36</sup> The "hormonal sex" of these patients as measured by levels of FSH, LH, and testosterone is somewhat similar to that of a postmenopausal woman. Although Klinefelter's patients have testes rather than ovaries, their testes are very small, and produce little testosterone and virtually no sperm. As noted earlier, in terms of (1) chromosomal karyotyping, (2) Barr body testing, and (3) assessment of neutrophils for the presence of "drumsticks," Klinefelter's males produce the same test results as females. Thus, perhaps it should come as no surprise when one discovers that a patient like Mr. A. who has Klinefelter's syndrome also has problems in terms of sexual orientation and in terms of the nature of his erotic desires.

Although Klinefelter's patients have been well studied medically, little epidemiological data surveying the prevalence of sex-related disturbances in the Klinefelter's population as a whole are available.<sup>37</sup> In many studies, pertinent questions regarding sexual phenomenology and experience were never asked.<sup>38</sup> Furthermore, the prevalence of sexual deviation, gender dysphoria, and related phenomena amongst the general public has not been well documented and therefore is unavailable for comparison purposes. For these reasons, in spite of the case of Mr. A. presented earlier, conclusions regarding the relationship between Klinefelter's syndrome and sexual deviation must be evaluated cautiously. Nevertheless, review of the literature (despite some disagreements<sup>39,40</sup>) suggests that the prevalence of sexual deviation syndromes in Klinefelter's patients may indeed be higher than it is amongst non-Klinefelter's men.<sup>41</sup> So Baker and Stoller, for example, reviewed over 100 pertinent articles and arrived at such a conclusion.<sup>33</sup> Since most Klinefelter's patients appear to be essentially normal boys until puberty, it is difficult to account for this apparently high prevalence of sexual deviation on the basis of child rearing practices or other types of early life experiences.

Not all patients with Klinefelter's syndrome show evidence of sexual deviation; rather some are hyposexual instead. In such cases, testosterone has sometimes been administered to increase rather than decrease sexual capacity. When this has

en done, these patients have reported a heightening of erotic desire, which again normalizes the apparent relationship between testosterone levels and sexual phenomology.<sup>51, 52</sup>

Although most Klinefelter's patients have low testosterone levels, often the levels are not so low as to obliterate sexual desire significantly. Therefore, when vital desires are deviant, as is the case with pedophilia, attempts to further reduce sexual appetite may still be warranted. This highlights the fact that the rationale for utilizing testosterone-depleting methods to treat paraphiliacs is based upon appreciation of the nature and intensity of the individual's erotic cravings, and not upon a lamentation of a biological abnormality. However, just as lung cancer is more likely to occur if a person smokes than if he does not, the likelihood of sexually deviant urges may be greater in the presence of certain kinds of biological abnormalities than in their absence.

#### etiology of Conventional and Unconventional Sexual Desires—associated Biological Pathologies

Dr. A., whose case of homosexual pedophilia was discussed earlier, was also diagnosed as having Klinefelter's syndrome. This, coupled with the fact that medications may sometimes be used in treatment, raises the question of whether one should routinely look for possible biological contributors to sexual behavior. In animal species other than man, biological factors clearly contribute significantly to such behavior. Female dogs, for example, become sexually responsive to male dogs only while in heat (estrus). At such times, in response to the odor of chemical substances emitted from the females, the males themselves become sexually much more assertive. In many species of birds, only the male sings. If a female zebra is given estradiol as an embryo, plus androgen-hormones as an adult, she will sing a male courtship song without having heard it previously.<sup>54</sup> In addition, she will display typically male mating behavior and, like normal males (but unlike normal females), will have an increased number of cells in the nucleus rubustus arthralialis and other brain regions (see Figure 5-4a).

In most species of rat, normally only males mount. "Mounting" is a behavior that involves placing the forepaws on the back of another animal while posturing the body in a fashion conducive to intercourse. Adult female rats given testosterone at a specific time in utero will also show this behavior which normally predominates in males.<sup>55</sup> Male rats do not normally build nests or care for their young, but they will build nests and show other kinds of "maternal behavior" if electrical stimulation is applied to certain brain areas.<sup>56</sup> Male Siamese fighting fish are programmed genetically to respond aggressively to the sight of another male. Tinbergen described in great detail how specific configurations of visual stimuli can elicit (or "release") specific sexual behaviors in stickleback fish.<sup>57</sup> The same is true of robbers and blowfishes (see Figure 5-4b). In some cases, animals are pre-

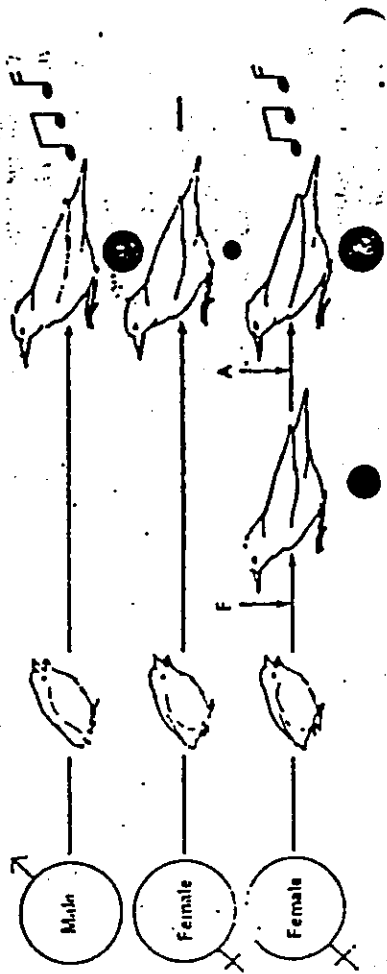


Figure 5-4a. Sex differences in male and female finches. Male birds sing; females do not. However, females treated with estradiol (E) just after hatching, and with androgen (A) at adulthood, do sing and exhibit other male behavior. Shaded disks represent the relative size of one brain region involved in song production. (From reference 54.)

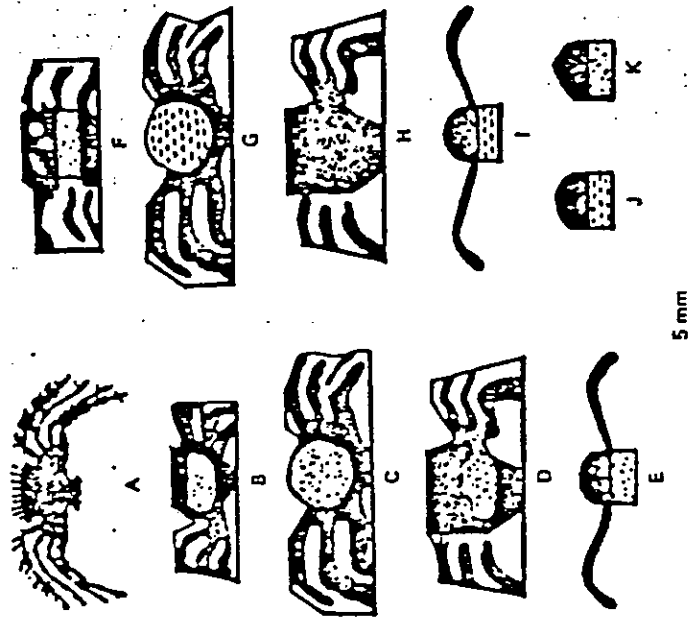


Figure 5-4b. Visual specificity of the sexual responsiveness of spiders. Male spiders with no prior sexual experience may attempt to mate (or attack) moving colored objects shaped like those on the left, but they will not do so with those on the right. (From reference 58.)



programmed genetically to respond sexually to sounds rather than vision. The sound of the wing beat of the female is the stimulus which attracts male crickets and mosquitos.<sup>54</sup> Some animals have an innate predisposition to follow, and become psychologically attached to, the first large object they see moving during a "critical time period" in early life. Attractions acquired in this fashion are said to be "imprinted."<sup>55</sup> Lorenz described young ducks who became so imprinted towards him that they tried to feed him live worms—a drive apparently so strong that they would try to force them into his ears if he closed his mouth.<sup>56</sup> Early life imprinting can influence the nature of an adult animal's sexual attractions.

In 1978, researchers reported a study in the *New England Journal of Medicine* documenting the observation that some women initiate sexual behavior most frequently during the ovulatory period (days 12 through 17) of their menstrual cycles.<sup>57</sup> This is a time in the cycle when the androgenic hormone androstenedione is ordinarily at its peak.<sup>58</sup> When estrogen and progesterone hormones were given to these women in the form of birth control pills, the result was a suppression of the ovulatory peak of female-initiated sexual behavior. Since regular menstrual cycling, including monthly menstruation, continued normally, this decrease in the frequency of female-initiated sexual behavior around the time of ovulation was apparently attributable, either directly or indirectly, to the altered hormonal status of the women in question.

Human males do not have to be taught how to obtain an erection. Instead, at some time in their lives, presumably because they are genetically preprogrammed to do so, they begin to have erections in response to specific kinds of tactile, mental, olfactory, or visual stimuli (such as the sight of a shapely female). Even human infants seem to respond instinctively in specific ways to certain stimuli such as a loud sound (which causes a startled reaction), the visual perception of height (which causes hesitation), or the sight of a familiar face (which causes smiling).<sup>59</sup> Goy and McEwen at a symposium at the Massachusetts Institute of Technology in 1977 suggested that biological factors may contribute more than previously appreciated to human social and sexual experience.<sup>60</sup> Recently, Pillard and co-workers summarized data suggesting that there may be a genetic predisposition towards male homosexuality.<sup>61</sup>

In humans (as well as in animals), structural and functional differences in the brain between males and females seem to depend upon exposure to various "sex hormones" during particular phases of embryonic development.<sup>62</sup> Females exposed prenatally to high doses of androgens tend, as adults, to show patterns of psychosexual development more typically seen in males.<sup>63</sup> Prenatal exposure to progesterone may have a "feminizing effect."<sup>64</sup> Exposing a male human fetus to medications containing estrogen may lead to a pattern of adult psychosexual behavior more frequently seen in women.<sup>65</sup> Oral administration of 10 mg per day of testosterone to adult women can increase sexual responsiveness and libido without causing masculinizing bodily changes.<sup>66</sup>

Because it seemed possible that biological factors might contribute significantly to human sexual behavior, a variety of laboratory tests were performed on a group of paraphiliac patients.<sup>67</sup> These data, which have recently been updated, are presented in Table 5-4. Although it will be important to perform similar tests on an appropriately matched group of persons with conventional sexual desires, for comparison purposes, there does appear to be a very high frequency of biological pathologies in these patients. These pathologies include structural brain damage, hormonal abnormalities, electroencephalographic dysfunctions, and chromosomal anomalies (such as Klinefelter's syndrome).

Thus far, the possible role of biology as an etiologic contributor to sexuality has been discussed. However, Stoller hypothesized that whereas biological factors may become a compelling determinant of sexual experience and function in the presence of significant organic anomalies (Stoller's "biological force" hypothesis), sometimes environmental influences such as early life experiences may play a more dominant role.<sup>68</sup> In this connection, Dr. John Money has discussed the case of a pair of genetically identical twins, one of whom required a total penectomy (surgical removal of the penis) a few days after birth, due to trauma suffered during circumcision. Subsequent to that penectomy, plus additional reconstructive surgery (and hormone supplementation at puberty), the child in question was reared as a girl. Although perhaps somewhat "tomboyish" in interests and play during childhood, this 46 XY female, now a teenager, feels herself psychologically to be a woman. Her sexual orientation and interests are directed towards age-appropriate males, and someday she hopes to marry and adopt children. Her genetically identical twin feels himself to be masculine, and he finds females appealing. Thus, it is clear that both biological and environmental factors can influence sexual phenomenology and behavior.

### PART III: THERAPIES

#### Psychotherapy and Behavior Therapy as Treatments—Biological and Syndromal Considerations

Four major types of treatment have been proposed to try to help sex offenders. They are psychotherapy, behavior therapy, medication, and surgery. Unfortunately, recognition that optimal treatment may depend upon proper differential diagnosis has often been unappreciated. Sometimes the goals of therapy are stated explicitly, for example, to help a person gain greater capacity for self-control, but this is not always the case.

Most psychodynamic theories make the assumption that conventional heterosexual identity alone is natural, and that other orientations and preferences are pathological variants which only occur when proper development goes awry. These theories see sexual deviation as a reflection of "unconscious" psychological conflicts and postulate that such conflicts come about as a result of unsatisfactory early life experi-

ences. However, in the author's opinion, they rarely explain adequately why such experiences should be expected to result in specific problems such as exhibitionism, rather than pedophilia or juvenile delinquency. Usually the intent of therapy is to try to "uncover" conflicts so that an individual can rework his developmental problems. In point of fact, there is reason to doubt whether sex offenders come to fully understand or change their sexuality by such means.

In an investigation published in *Immit* in 1979, Eicher studied a group of transsexuals (persons who feel themselves to be psychologically "trapped in the body of the wrong sex").<sup>78</sup> He examined the white blood cells of these persons, looking for the presence or absence of a cell surface substance known as H-Y antigen.<sup>78</sup> Ordinarily (as depicted schematically in Figure 5-5), H-Y antigen is present on the surface of cells taken from men, but absent in women. In some transsexuals, Eicher found that the gender the individual felt himself (or herself) to be corresponded with the presence or absence of H-Y antigen, rather than with that individual's bodily appearance. If Eicher's observations can be replicated, this suggests that "sex change operations," which have been performed on some transsexuals, may actually serve to correct body phenotype (external appearance) to conform with H-Y antigen genotype.<sup>78,80</sup> Such knowledge is clearly not accessible via introspective methods alone. Even if a person could come to such an understanding, this would not necessarily make it any easier for him to change his behavior. There is little solid evidence that traditional psychotherapies, when used alone, are consistently effective in treating paraphiliac syndromes.

Behavior therapists tend to be less concerned with the historical antecedents of unconventional sexual behavior than with the question of what can be done about it. The feature common to most behavior therapies is that the therapist prescribes a course of action for the patient to follow which is intended to help decrease his attraction towards previously erotic deviant stimuli, such as children. Often a simultaneous attempt is made either to teach the patient more appropriate ways of achieving sexual satisfaction or to condition him to become sexually arousable by an age-appropriate consensual partner. This is clearly a formidable task.

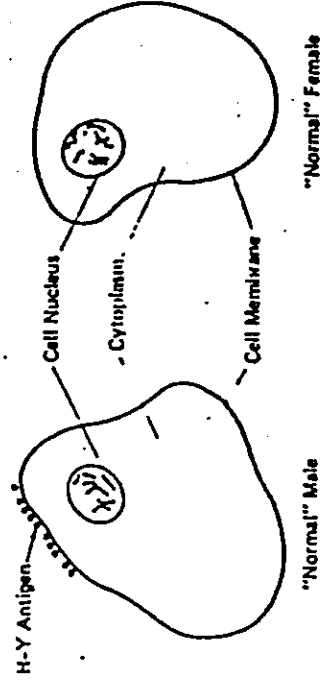


Figure 5-5. H-Y antigen is ordinarily present on the surface of cells taken from men but absent in women, as shown schematically in this figure.

**Table 5-4. Associated Findings in a Group of Male Patients with Sexual Disorders.**

Sexual Disorder	Associated Findings
Erotic sadism	Oculomotor abnormality suggestive of basal ganglion dysfunction. Unexplained gait disturbance.
Homosexual pedophilia	Dyslexia; childbed tisp requiring speech therapy.
Homosexual pedophilia	Cortical atrophy; grand mal seizures; recurrent slow delta waves and sleep activity over frontal brain regions on EEG.
Hyposexuality	Elevated testosterone; family history of adrenogenital syndrome.
Homosexual pedophilia	Klinefelter's syndrome, mosaic (90% 47 XXY, 10% 46 XY). Elevated FSH and LH. Low testosterone.
Homosexual pedophilia	Siriusmism; childhood learning disorder.
Homosexual pedophilia	Schizophrenia.
Exhibitionism	Elevated testosterone; prior history of coma several months following head trauma; grand mal seizures.
Heterosexual pedophilia	Cortical atrophy (2° to trauma); right-sided partial hemiparesis; visual spatial deficits.
Homosexual pedophilia	Elevated testosterone.
Heterosexual pedophilia	New total blindness due to brain damage.
Heterosexual pedophilia	Elevated testosterone; mild ventriculomegaly and cortical atrophy most pronounced in area of right Sylvian fissure (by CAT scan); elevated 24-hour urine pregnenolone (3.1 mg — normal is less than 2.5 mg).
Homosexual pedophilia	Elevated LH. Generalized muscular hypotonia.
Paraphilic rape	Elevated testosterone; grand mal seizures.
Homosexual pedophilia	Elevated testosterone.
Hyposexuality	Cortical atrophy; cortical blindness; mild mental retardation.
Voyeurism	Elevated LH.
Homosexual pedophilia	Dyslexia.
Homosexual pedophilia	Mosaic chromosomal pattern (97.5% XY, 2.5% XX); large heterochromatic region at centromere of autosome number 19 (polymorphic variant); low LH.
Homosexual pedophilia	46 XY, inversion 9p+q- chromosome pattern. High LH.
Paraphilic rape	47 XYY chromosome pattern. Elevated testosterone, FSH, and LH. Elevated FSH.
Exhibitionism	Elevated LH.
Homosexual pedophilia	Low LH.
Heterosexual pedophilia	Elevated testosterone, FSH, and LH.
Homosexual pedophilia	Klinefelter's syndrome; elevated FSH and LH. Low testosterone.
Homosexual pedophilia	Elevated testosterone.
Homosexual pedophilia	Elevated testosterone.
Voyeurism	Elevated testosterone and LH.
Hyposexuality	Elevated testosterone; structural brain damage.
Homosexual pedophilia	Elevated testosterone, FSH, and LH. EEG abnormality.
Transsexualism	Klinefelter's syndrome. Low testosterone.
Homosexual pedophilia	Elevated testosterone.
Homosexual pedophilia	Klinefelter's syndrome. Elevated FSH and LH. Low testosterone.

NOTE: Normal (s.d.) = 2) testosterone range in men = 275-875 ng/100 ml. Normal FSH in males = 90-276 ng/ml. Normal LH in males = 36-64 ng/ml. No associated abnormalities were detected in seven other patients with sexual disorders who were also assessed.

Much of the literature regarding the behavioral treatment of sex offenders is anecdotal. However, Isaac Marks at the Maudsley Institute in England documented good therapeutic results at two-year follow-up in treating transvestites (men who become erotically aroused by dressing in women's clothing), but the very same behavioral approach failed with transsexuals (men who feel themselves to be women).<sup>64</sup> Blain and Lanyon obtained good results in using behavior therapy to treat some exhibitionists.<sup>65</sup> Behavior therapy has not proven consistently effective in treating pedophilia. This suggests that some sexual deviation syndromes may be responsive to behavioral therapy treatments, whereas others may not. Perhaps more attention needs to be paid to differences amongst these syndromes, in addition to studying their common features.

### Medication to Treat Sexual Deviation Syndromes

The purpose of utilizing medication to treat sexual deviation syndromes is to try to decrease sexual libido. The rationale for doing this is based upon the assumption that if one experiences sexual hungers of the sort that might cause problems, for example, a hunger for children, one is better off being less hungry. Because the various medications used for this purpose are not intended to make a man impotent and incapable of sexual activity, they may be most helpful in facilitating self-control in cooperative persons whose "offending behavior" is an expression of unconventional sexual tastes. They may be less helpful when the "offending behavior" is a manifestation of diminished intellect, psychosis, personality problems, or drug-induced intoxication—though such as hypothesis requires validation.

In utilizing drugs as a possible treatment method, one can address the issue of the relationship between biological factors, such as testosterone levels, and states of mind, such as those related to sexual desire. It is important to recognize, however, that the use of biological methods to successfully treat a condition does not prove that the condition and the treatment are directly and simply related. Aspirin can be used to treat a fever, but fever is not due to, or precipitated by, aspirin deficiency.

Amongst the drugs that have been used investigatively to try to treat sexual deviation syndromes are certain of the major tranquilizers such as meprobolol.<sup>66-68</sup> Initially, use of these drugs for this purpose was based upon the observation that patients taking them for other reasons sometimes reported diminished libido. However, there is little substantive evidence to support the notion that these drugs can be used successfully in the treatment of paraphiliacs.

A class of drugs not yet utilized which may play a future role in treating these conditions are the gonadotropin releasing hormone (Gn-RH) agonists.<sup>67</sup> Again, rationale for their use is based upon the theory that the hormone testosterone "flicks" the sex drive in men. It is the increased production of testosterone by the testes around the time of puberty which correlates with (a) masculinizing bodily

changes such as deepening of the voice and growth of facial hair and (b) an increased psychological interest in sex. Prolonged (as opposed to brief) administration of Gn-RH agonists, for reasons that are poorly understood, paradoxically inhibits the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the anterior pituitary gland in the brain (see Figure 5-6). This, in turn, results in decreased testosterone output by the testes, which require stimulation from FSH and LH in order to produce testosterone. The adrenal gland, which also

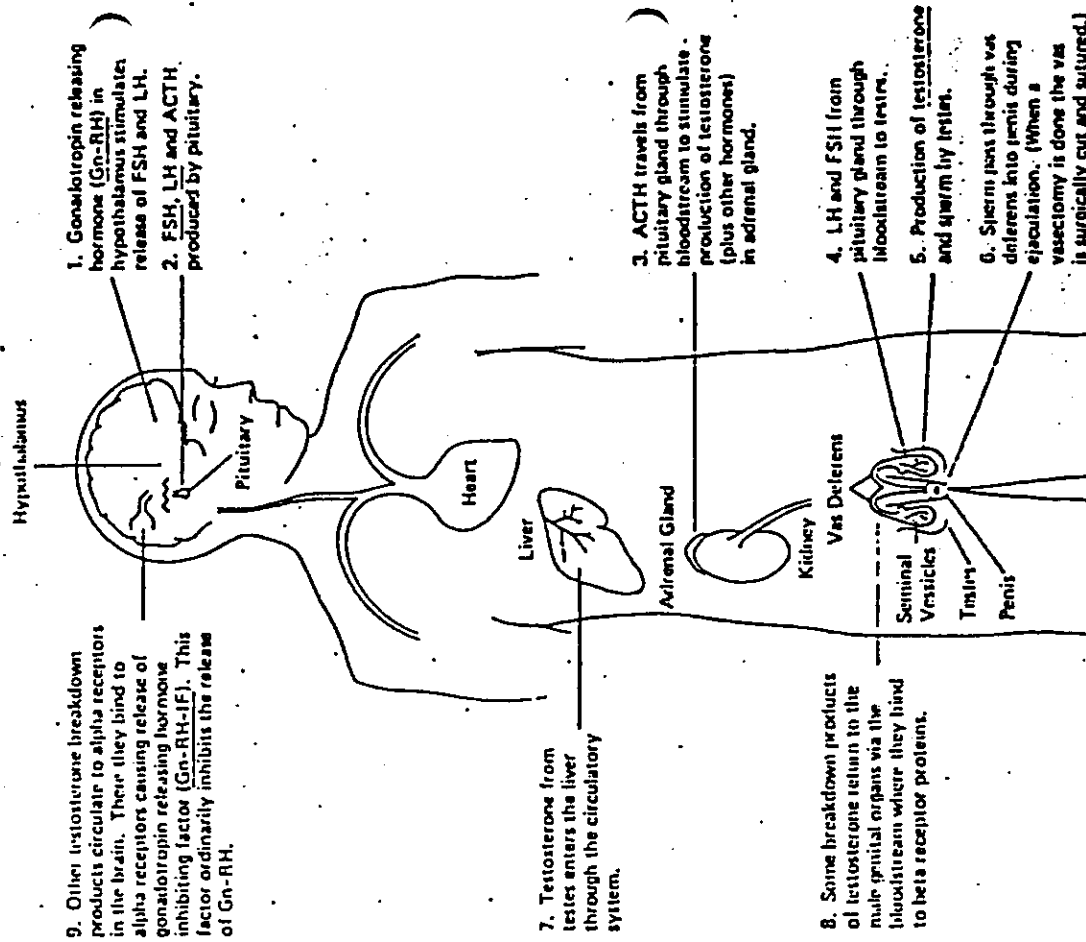


Figure 5-6. Relationships among various "male sex hormones."

which is testosterone in very small amounts, does not depend upon FSH and LH stimulation for this purpose. ACTH, another hormone produced by the pituitary gland, on the other hand, can influence adrenal testosterone output. A recently identified substance, Gn-RH inhibiting factor (see Figure 5-6), which may someday be useful in decreasing sex drive, has not yet been synthesized and therefore is unavailable for therapeutic purposes at present.<sup>68</sup>

Two other drugs that reduce testosterone levels which have been used in an attempt to treat sexual deviation syndromes are cyproterone acetate (CPA) and medroxyprogesterone acetate (MPA). Cyproterone acetate, which must be taken daily in pill form, is currently unavailable in the United States. A controlled double-blind clinical trial performed in Canada concluded that this medication could successfully reduce sexual interest and libido in a group of paraphiliac patients.<sup>69</sup> This investigation did not use a pharmacologically active substance with similar side effects for comparison purposes, however, thereby leaving doubt about whether study participants were indeed "blind" as to when CPA was or was not actually being administered. This raises the possibility that patients may have reported reduced libido as a psychological reaction to feeling "drugged" and that their feelings of diminished sexual interest may not have been attributable entirely to a pharmacologically induced decrease in testosterone levels.

When cyproterone acetate is administered, the pituitary gland does not increase production of FSH in response to decreased testosterone levels as occurs when an individual is castrated. This suggests that the drug has an effect not only upon the testes but upon the brain as well, presumably in areas relevant to sexual phenomenology and function. The same is true of medroxyprogesterone acetate.

None of the drugs used in the treatment of sexual deviation syndromes act specifically to decrease deviant sexual desires while leaving conventional sexual interests intact. Thus, currently available medications do nothing to change sexual orientation; rather, if successful, they simply suppress sexual appetite in general. Two major options are possible as a means of trying to reduce the presumed sex drive stimulating effects of testosterone. One is to try to interfere with testosterone production, whereas the other is to try to block the effects of testosterone (or more accurately, of its breakdown products) upon the brain. In the future, it may be possible to block the central effect of testosterone breakdown products upon the brain without interfering with levels of circulating testosterone peripherally. However, this cannot yet be done safely in humans.

The theoretical rationale for using testosterone-depleting medications to treat paraphiliacs would be strengthened if it could be shown empirically that intensity of sexual desire is indeed correlated with testosterone level. Davidson and colleagues showed that administration of testosterone to men whose plasma levels were below 150 ng per 100 ml led to a prompt increase in sexual appetite and activity.<sup>70</sup> However, Brown and others, in a study involving 101 men, demonstrated that variations in testosterone level within the intermediate range (275 to

875 ng per 100 ml in many laboratories) did not necessarily correlate with self-reports of sexual interest.<sup>71</sup> In animal studies, moderate decreases in testosterone level due to CPA administration failed to decrease sexual activity as significantly as had been expected.<sup>72</sup> Thus, in order to achieve therapeutic sex drive reduction, a significant decrease in testosterone level may be essential.

According to Laschet and Laschet, 80% of the men involved in a nonblind clinical trial reported significant reductions in sex drive in response to a daily oral dose of 100 mg of cyproterone acetate.<sup>73</sup> Twenty percent of the men required 200 mg per day orally, or 300 to 600 mg intramuscularly every week to ten days, in order to achieve a comparable effect. Follow-up of over 300 men for periods as long as eight years revealed few serious side effects when these dosages were employed.<sup>74</sup>

Stern and Eisenfeld showed that administration of radioactive-labeled testosterone to castrated rats pretreated with CPA did not result in its being bound to peripheral target tissues such as the seminal vesicles.<sup>75</sup> Thus, CPA appears to prevent the binding of testosterone to peripheral target organs. However, CPA does not block testosterone uptake in central hypothalamic brain regions thought to mediate sexual behavior.<sup>76</sup> In contrast, medroxyprogesterone acetate does, but it does not prevent testosterone binding peripherally. MPA inhibits FSH more than LH, whereas CPA inhibits only LH (see Figure 5-6). Thus, these two antiandrogenic drugs appear to exert an effect in slightly different ways. Both, however, reduce production of testosterone from its chemical precursors.<sup>77,78</sup> Antiandrogens may also exert an effect by preventing the rise in testosterone which ordinarily occurs as a consequence of sexual stimulation.<sup>79</sup>

**Medroxyprogesterone Acetate (Depo-Provera).** In the United States, medroxyprogesterone acetate is the drug that has been used most frequently to treat paraphiliac patients.<sup>2</sup> This medication is available in depot form, which means that it is prepared in such a fashion that it can bind to muscle, from where it is gradually released into the bloodstream. Injecting a depot drug into muscle accomplishes the same purpose as taking pills daily, in that both keep medication constantly present within the bloodstream so that it can act on appropriate tissue and organ receptors (see Figure 5-7). Some of the medication travels through the circulation bound to carrier proteins, whereas the remainder circulates in an unbound (or free) form. The customary starting dosage of MPA has been 500 mg per week of the 100 mg per ml solution. No more than 250 mg is given into a single injection site. The 100 mg per ml solution has greater bioavailability (i.e., it produces higher blood levels at a given dosage) and is less painful than the 400 mg per ml concentration. Periodic blood tests can be performed to document decreases in serum testosterone levels, and the medication is not feminizing (e.g., it does not cause breast enlargement). Dosage can be titrated so as not to cause total impotence, but studies to determine optimal dosage levels have yet to be performed.

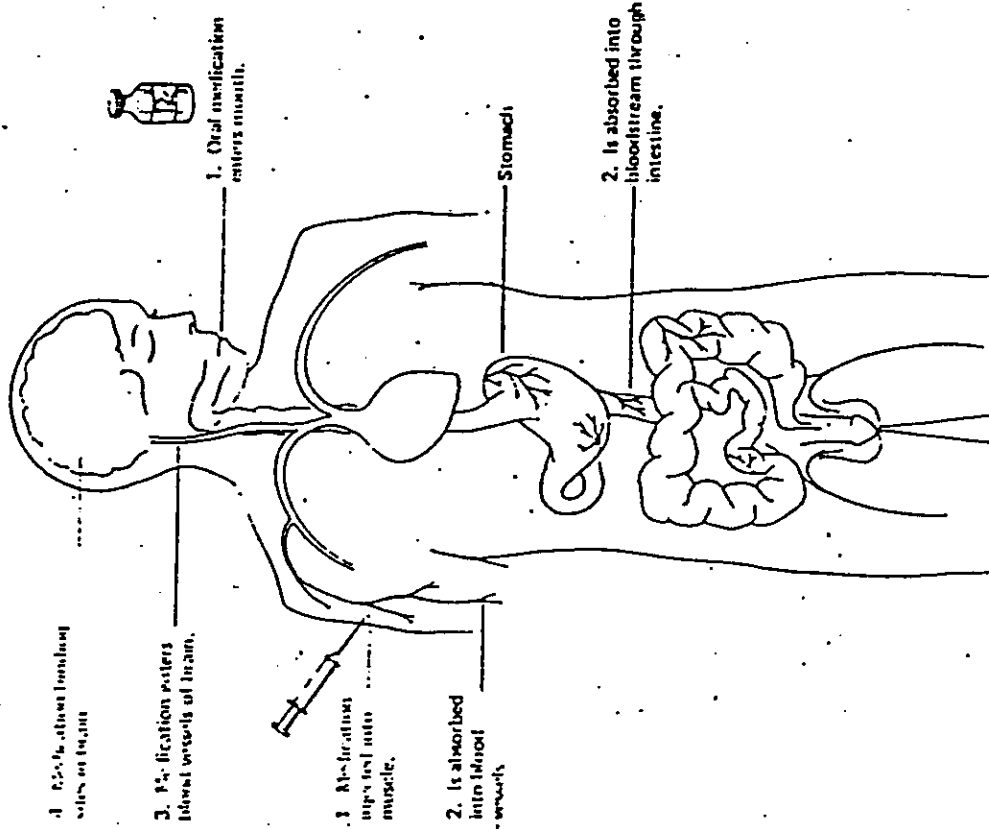


Figure 5-7. Comparability of oral and intramuscularly injected medication treatment.

The major side effects of MPA include weight gain, mild lethargy, cold sweats, nightmares, and hot flashes. Hypertension is common. Elevated blood glucose, dyspnea (shortness of breath), hypogonadism (shrunken testicle size), and malignant breast tumors (in female beagle dogs) have also been reported. The drug causes a decreased sperm count which makes impregnation unlikely, but the remaining sperm can be atypical which suggests that the fetus might be deformed were a man to father a child while taking the drug. It is believed that these major side effects are reversible if medication is stopped.

Table 5-5 shows changes in sexually deviant behavior in a group of 20 chronic paraphiliac patients treated with medroxyprogesterone acetate.<sup>2</sup> Of these patients,

**Table 5-5. Changes in Sexually Deviant Behaviors in 20 Chronic Paraphilic Male Patients Treated with Medroxyprogesterone Acetate.\***

PATIENT	AGE (YEARS)	DIAGNOSIS	AVERAGE FREQUENCY OF SEXUALLY DEVIANT BEHAVIORS BEFORE TREATMENT†	DRUG TREATMENT‡		OCCURRENCE OF SEXUALLY DEVIANT BEHAVIORS	
				LENGTH	MAXIMUM DOSAGE	DURING TREATMENT	AFTER TREATMENT
1	34	Homosexual pedophilia	Once/week	5 years, 9 months	500 mg/week	None	Treatment dropout; no relapse less than 1 year after treatment
2	31	Homosexual pedophilia	Twice/month; 1 known arrest	1 year	300 mg/week	None	Treatment dropout; relapsed less than 1 year after treatment
3	30	Heterosexual exhibitionism	Twice/week	10 months	250-300 mg/week	None	Treatment dropout; relapsed more than 1 year after treatment
4	34	Homosexual masochism	4 times/week	3 months	200 mg/week	None	Treatment dropout; relapsed less than 1 year after treatment
5	27	Bisexual pedophilia	Twice/week	3 months	400 mg/week	None	Treatment dropout; relapsed more than 1 year after treatment
6	43	Transvestism; homosexual incest	7 times/week; 2 incidents	1 year, 4 months, intermittently	150 mg every other week	None	Relapsed less than 1 year after treatment
7	52	Heterosexual sadism	Once every 2 weeks for 25 years	3 years, 5 months	600 mg/week	None	Treatment continues; no relapses
8	29	Homosexual pedophilia	Twice/week; 6 arrests in 6 years	10 months	500 mg/week	None	Treatment dropout; relapsed less than 1 year after treatment
9	36	Homosexual pedophilia	Once every 2 months; 4 arrests in 6 years	2 years	500 mg/week	None	Treatment continues; no relapses
10	56	Homosexual pedophilia	Once/week; 14 arrests in 29 years	3 years, 9 months	300 mg/week	Relapsed	Treatment continues
11	40	Homosexual pedophilia	Twice/week; 7 known arrests	4 years, 2 months	400 mg/week	None	Treatment continues; no relapses
12	45	Voyeurism; heterosexual pedophilia	— Twice/week; 5-8 arrests; numerous institutionalizations	5 years, 3 months	300 mg/week	None	Relapsed less than 1 year after treatment; treatment now resumed
13	27	Homosexual pedophilia	Twice/week since age 10	5 years, 9 months	200 mg/week	None	Treatment completed; no relapse more than 1 year after treatment
14	41	Homosexual pedophilia	Once/month; numerous arrests; 4 convictions; 4 reported parole violations	3 years, 8 months	500 mg/week	Relapsed	Treatment continues
15	37	Homosexual pedophilia; exhibitionism	Record unclear; probably several incidents/year	3 years, 9 months	350 mg/week	None	Treatment completed; no relapse less than 1 year after treatment
16	26	Homosexual pedophilia	Once/week	1 year, 1 month	200 mg/week	None	Treatment dropout; relapsed more than 1 year after treatment
17	24	Heterosexual voyeurism	Once/month	1 year	400 mg/week	Relapsed after alcohol consumption	Treatment continues; in prison
18	40	Heterosexual exhibitionism	Five times/day since age 11; first arrest at age 21; numerous others	2 years, 2 months	200 mg/week	None	Treatment dropout; relapsed less than 1 year after treatment
19	29	Heterosexual exhibitionism	Twice/week	2 years, 1 month	250 mg/week	None	Treatment dropout; relapsed less than 1 year after treatment
20	46	Heterosexual exhibitionism	Four times/week; binges of 20/day	2 years, 3 months	300 mg/week	None	Treatment continues; no relapses

\*Sexually deviant behavior was considered to have occurred if the patient was accused of having or admitted having a deviant sexual contact (e.g., an episode of public genital exposure). Any occurrence of such behavior was scored as a relapse once treatment had been initiated, even if it did not come to the attention of the law as an official complaint.

†Based on institutional records and patients' statements.

‡Study participants who stopped taking medroxyprogesterone acetate did so against medical advice, except in the cases of patients 13 and 15. Some patients were irregularly compliant with medication even during the period when it was being prescribed.

15% (3 of the 20) showed recurrences of deviant activity while taking the medication, indicating that it is not 100% effective. On the other hand, 85% of these men were without further legal involvements while receiving medication, sometimes for periods as long as several years. The number of patients reported upon was small, and additional studies with larger numbers of patients need to be conducted. Some of the patients were self-referred and had no legal charges against them.

Most of the patients reported upon in Table 5-5 were not hospitalized to initiate treatment and were not required to take medication as a condition of probation. In time, many became noncompliant, sometimes because they believed themselves cured. Currently, most patients are briefly hospitalized for three or four weeks at the beginning of treatment, and subsequent outpatient compliance has improved dramatically.

The data presented in Table 5-5 show clearly that in most cases, when paraphilic patients discontinue medications they relapse. This supports the hypothesis that this form of treatment is not a cure or a temporary catalyst to be used until psychotherapy can become effective. Rather, for the majority of patients, the medication appears to act as a sexual appetite suppressant. If deviant hungers are allowed to return, most patients seem again to be at risk of giving into temptation by satisfying those hungers. In a few cases, patients have reported that MPA fails to significantly decrease their sexual drive. Why this should be so is not known.

In the future, it will be important to conduct a controlled double-blind study in which neither the patient nor the evaluator is aware of whether MPA or a placebo with similar side effects has been administered. Fluphenazine, a drug with a similar intramuscular route of administration and similar side effects, which does not lower testosterone could be utilized for this purpose. Such a study could help document that any reduction in the frequency of sexual fantasies and in the intensity of erotic cravings experienced while receiving MPA was indeed related to lowered testosterone levels, rather than to psychological expectation or other factors independent of testosterone level. Such a study is now being planned. If it can be shown conclusively in this way that MPA does indeed decrease sexual appetite, changes in long-term recidivism rates could then also be ascertained amongst sex offenders treated with MPA, whose offending behavior either was, or was not, thought to be the manifestation of a sexual deviation syndrome.

**Ancillary Care.** Treating patients with antiandrogenic medications involves considerably more than simply providing injections. Although psychological counseling has not been shown to be a method capable of reducing sexual desire, such counseling may well be beneficial in other ways to the person who has been experiencing such desires. Although medication may decrease the lust a homosexual pedophilic man experiences for little boys, it cannot replace feelings of companionship, intimacy, affection, devotion, or love that may previously have been provided by children. Thus, once deviant erotic urges have been diminished by medication, an individual may also find counseling helpful in his effort to adopt a

new life style. For those who fail to respond to medication, supportive therapy and punishment to encourage efforts to resist temptation should be tried.

In initiating medication treatment, a brief period of psychiatric hospitalization lasting three to four weeks may be useful for three reasons, in addition to affording an opportunity for more comprehensive assessment. First, it removes the patient from unsupervised situations in which he might succumb to temptation before medication can begin exerting its anticipated effect. Secondly, many patients seem to develop a stronger alliance with potential help givers when living in hospital than when treatment is initiated on an outpatient basis. It is perhaps for this reason that brief hospitalization has sometimes been found to significantly increase subsequent outpatient compliance. Finally, while hospitalized, patients can speak with a group of other men having similar difficulties, which often brings a sense of relief and of being accepted as a person, thereby opening up the opportunity for greater candor. Many of these men have never before had a chance to talk openly with others without fearing that they would be perceived, and dealt with, in a demeaning way. Although the hospital staff in no way condones their behavior—quite the contrary—they do attempt to appreciate the basis for it, and they treat patients respectfully and kindly. The families of these patients can also be seen at this time, which can be important given the nature of their problems. How does a wife tell the neighbors that her husband has been arrested for exhibitionism or for sexually fondling the child next door? Patient confidentiality is maintained, but non-compliance is reported to the courts when appropriate. Rehospitalization may be required if outpatient treatment, which can include group therapy, is proceeding poorly. It is made clear to patients that a goal of therapy is to try to help them discontinue sexual behavior that violates the rights of others—not to make them feel better or less guilty about continuing it.

### Surgery as Treatment for Sexual Deviation

The use of surgery to treat paraphilic patients is well summarized in an article entitled "Therapeutic Sex Drive Reduction" written in 1980 by Dr. Kurt Freund of the Clark Institute of Psychiatry in Toronto.<sup>100</sup> The two major types of surgical procedures which have been used are (1) orchidectomy (castration) and (2) stereotactic neurosurgery. Stereotactic neurosurgery is performed with the aid of microscopic sized surgical instruments capable of producing minimal-sized brain lesions. The effects of surgery (and of electrical and chemical stimulation or ablation of potential surgical sites) have been studied in both animals and men. Obviously, surgery should be considered as a therapeutic option for sex offenders only under extraordinary circumstances.

**Castration.** There are few well-controlled studies assessing the effects of castration upon an animal's tendency to approach a potentially available sexual partner.<sup>101</sup> Nevertheless, there appears to be little doubt that removal of the gonads

eventually decreases sexual interest significantly in most animals. In comparison to the rate of testosterone depletion, however, the corresponding postsurgical fading out of sexual behavior in castrated animals can be very slow. Furthermore, sexual interest may wane more slowly than sexual capacity as evidenced by the observations that (1) ejaculatory capacity often disappears before the animal loses the ability to sustain an erection and (2) the animal may continue attempting to mount receptive females even after erections have become rare.<sup>101</sup>

Individual differences amongst castrated animals are frequent. Phenix and colleagues observed a substantial overall decline in virtually all aspects of sexual behavior in ten castrated monkeys.<sup>102</sup> However, while some of the animals ceased ejaculations immediately following surgery, others did not do so until over a year later. These postsurgical differences could not be attributed to presurgical differences in frequency of sexual behavior. The causes of individual variations in the rapidity with which various animals cease sexual behavior following orchidectomy are not clear, just as it is unclear why some humans continue to have apparently high libidos even after treatment with testosterone-depleting agents.

A number of studies have looked at the recidivism rate of sex offenses following castration in humans. Sturup and others conducted over 4000 follow-up examinations of 900 castrated sex offenders in Denmark over a 30-year period between 1929 and 1959.<sup>103-104</sup> There was definite recidivism of only 1.1% after castration, and if unclear cases were included, the recidivism rate was 2.2%. Wiffels reported comparable findings.<sup>105</sup> Ficher Van Rossum reported a 1.3% recidivism rate amongst 237 Dutch cases, and Kinnmark (and Ostler) reported similarly low rates on 307 Swedish patients.<sup>106</sup> Bremer found a 7.3% recidivism rate after five years in a group of 41 castrated sex offenders who, prior to treatment, had a recidivism rate of 58%.<sup>107</sup> Reported recidivism rates of castrated German sex offenders were also low.<sup>108</sup> This study also reported on normal German men forcibly castrated under Hitler.

Comu, in Switzerland, compared 121 castrated sex offenders with 50 offenders who had refused recommended castration.<sup>109</sup> Follow-up ranged between 5 and 30 years. The recidivism rate of castrated offenders was 5.8%, indicating that castration does not make further sexual offenses impossible. However, the recidivism rate of the 50 offenders who had refused castration was 52% (15 committed one additional offense, while 11 others committed between two and seven additional offenses each). Presumably, these differences in recidivism rate were a reflection of whether or not castration had been performed, although the possibility that the voluntarily castrated group contained more patients genuinely motivated to stop offending behavior cannot be entirely excluded. Prior to castration, both groups had a comparable frequency of offending behavior.

Freund pointed out that the degree to which sexual drive decreases after castration appears to depend upon the length of time of testosterone depletion.<sup>100</sup> Thus, if it is the case that some repeat sex offenses occur a short time after surgery, even

further lowering of the recidivism rates might be possible by keeping patients in the hospital longer following castration.

Besides documenting changes in recidivism rate, a number of investigators obtained self-reports from sex offenders regarding potency. In many cases following castration, some degree of erotic desire and the capacity to perform sexually remained.<sup>110</sup> Hackfield pointed out that this does not present a problem in terms of treatment since the surgery fulfills its intent if it decreases sex drive sufficiently to enable the patient to refrain from acting upon unacceptable erotic urges.<sup>110</sup> Stump described several cases in which pleasurable intercourse was successfully practiced for many years following castration in response to advances from consensual female partners.<sup>104</sup> Although a castrated man could reverse his condition by undergoing testosterone treatment, few cases have been detected in which this has occurred without medical approval.

Testosterone appears to be a prehormone which is broken down in the liver to form other metabolically active substances. Some of these bind to receptor sites in the brain, presumably stimulating areas related to erotic desire. Other testosterone breakdown products bind to receptors on peripheral tissues likely related to physical capacity to obtain erection and to ejaculate (see Figure 5-6). Freund suggests that someday it may be possible to administer active breakdown products of testosterone to castrated sex offenders, which will enhance their sexual capacity by affecting peripheral receptors without increasing sexual desire (via central brain stimulation) to a level where it becomes difficult to resist temptation.<sup>100</sup>

**Neurosurgery.** The second type of surgical procedure used in the treatment of sex offenders is stereotactic neurosurgery. In order to try to determine whether such surgery might be feasible in humans, a great deal of animal experimentation has been performed. That work has attempted to identify structures in the brain (1) that accumulate relatively large amounts of sexual hormones, (2) that lead to changes in the output of sexual hormones in response to either stimulation or ablation, or (3) that lead to changes in sexual behavior in response to either stimulation or ablation. Some researchers have also studied "experiments of nature" by looking at alterations in sexual behavior that correlate with human brain pathology.<sup>111</sup>

It is clear from studies done upon animals that lesions in some brain regions can readily decrease the frequency of sexual behavior without affecting either perceptual-motor capacity or circulating testosterone levels.<sup>112,113</sup> The area preoptica in the hypothalamus is one such region.<sup>113</sup> It seems to be particularly rich in sex hormone receptors. Other areas of the brain such as the limbic system accumulate sexual hormones to a lesser degree or not at all.

Exposing various areas of the brains of live animals to sex hormones to see whether sexual behavior will occur is another method used in an attempt to identify potential neurosurgical sites. This has produced some intriguing observations. Estrogen applied locally to specific hypothalamic sites in male rats leads to a lordotic



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response—a backward elevation of the pelvis that facilitates intercourse in females.<sup>112</sup> Testosterone implants in certain hypothalamic sites can reactivate mating behavior in castrated male animals, but similar implants in other brain sites cannot.<sup>114</sup> Electrical stimulation in the dorsal part of the lateral area preoptica causes almost uninterrupted mounting and frequent ejaculations in male rats.<sup>115</sup>

In 1939, Kluver and Bucy described a syndrome in cats, produced by bilateral temporal lobectomy, that included intensified indiscriminate sexual behavior.<sup>116</sup> In 1954, Schreiner and Kling showed that this hypersexual activity could be abolished by castration, but reinstated with testosterone replacement therapy—which suggests that the behavior in question was sex hormone related.<sup>117</sup> They demonstrated that lesions to specific sites in the ventromedial nucleus of the hypothalamus could also abolish this hypersexual activity.

In 1966 a team of neurosurgeons performed stereotactic brain surgery on a homosexual pedophile, making a lesion in the ventromedial nucleus of the hypothalamus in the same area that had seemed to decrease hypersexuality when it had been ablated in Kluver-Bucy cats.<sup>118</sup> The patient subsequently indicated that his erotic fantasy life was virtually abolished and that he had lost his pedophilic urges. In 1979, Orthner (and others) reported that substantial therapeutic sex drive reduction had been achieved in 34 sex offenders treated neurosurgically in a similar way.<sup>111,112,119</sup> Although no formal instruments were used to confirm the validity of the patients' self-reports, in many cases follow-up extended over several years with no known recurrences. Major side effects were increased appetite, weight gain, and reported absence of dreaming. Freund feels that this surgical team may have obtained genuine success and that if it can be more conclusively established that neurosurgery appreciably lowers the recidivism rate of sex offenders, none of the reported side effects appeared disproportionate.

Schmidt and Schurshel cautioned that psychosurgery of this sort has sometimes been performed without proper safeguards with poor results.<sup>120</sup> They cited a study by Muller involving ten paraphiliac patients. Three years after surgery, four of the ten patients were lost to follow-up, three were said to be significantly improved, and two unimproved. Of the two unimproved patients, both subsequently underwent castration. The tenth patient in this series, a pedophile with sadomasochistic fantasies, was released from prison after neurosurgery and was administered antiandrogenic medication until he complained of impotence with an age-appropriate girlfriend, at which time medication was stopped. Several weeks later he was accused of murdering a 10-year-old child.

A recent governmental task force appointed to consider the topic of psychosurgery in the United States concluded that it does hold therapeutic promise but recommended that its use be confined to designated research centers to try to assure proper safeguards.<sup>121,122</sup> Some authorities feel that brain surgery to attempt to decrease troublesome sexual appetites should for the time being be discontinued until further data from animal experimentation become available.<sup>123</sup>

## Future Research

Figure 5-8 shows pictures obtained by means of a CAT scan and a PET scan. The term CAT scan is an abbreviation for computer-assisted tomography. The equipment involved in producing these X-rays is manufactured by the EMI Corporation; thus, EMI scan is also sometimes employed.

When first marketed, the CAT scan represented a significant improvement over previously available X-ray procedures because not only could it show the presence of hard structures such as bones or tumors, but it was also capable of depicting the details of softer tissues such as kidney, lung, or brain. Furthermore, with the aid of computer analysis it could safely produce pictures of these structures corresponding to various depths within the tissue being X-rayed. X-rays of the brain taken by CAT scan depict structure but not function.

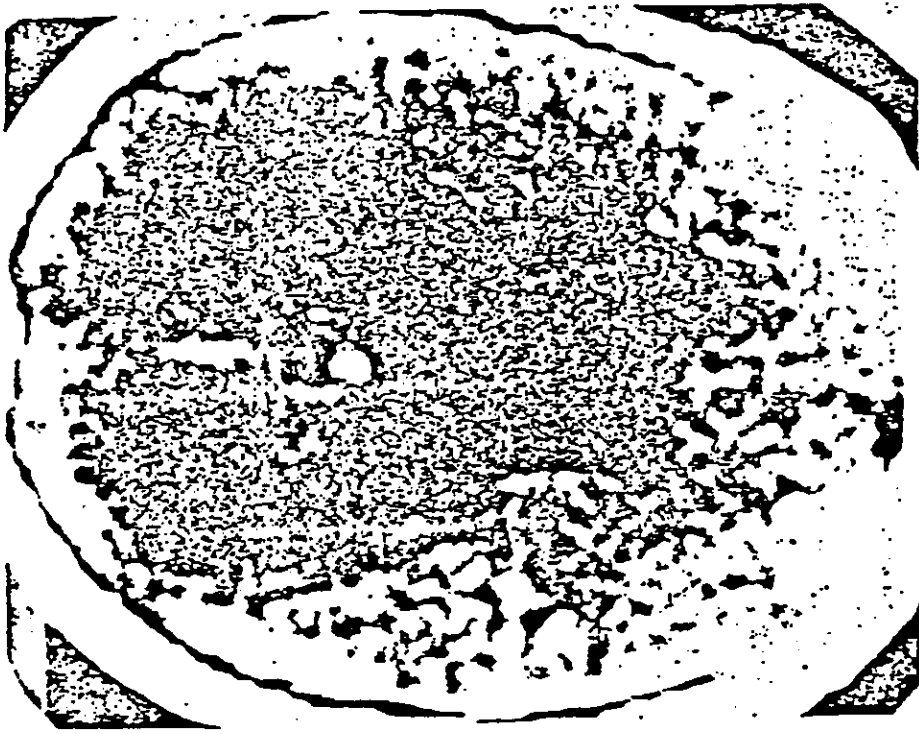
The term PET scan is an abbreviation for positron emission tomography. A test, like thyroid scanning, requires that the patient be administered a small amount of radioactive material—in this case glucose—which emits positrons. A computer attached to Geiger counter type sensors placed around the patient's head then produces a series of cross-sectional pictures of the brain at various depths. These pictures vary in color according to the amount of glucose being utilized as a source of energy at a given anatomical site. In this manner, the PET scanner can provide a picture showing which areas of the brain are most active metabolically at a given time—for example, during sexual arousal. Because the half-life (decay time) of radioactive glucose labeled in this fashion is short, the test is believed to be safe; it is no more dangerous than conventional thyroid scanning procedures which have been used medically for many years.

The PET scanner may help provide answers to the following questions. What areas of the brain are metabolically active during sexual arousal? Do these areas differ in persons with unconventional sexual orientations or interests? Do these areas differ in persons with organic anomalies such as Klinefelter's syndrome? What are the effects of testosterone-diminishing medications, which given in or higher dosage forms, upon brain activity during sexual arousal?

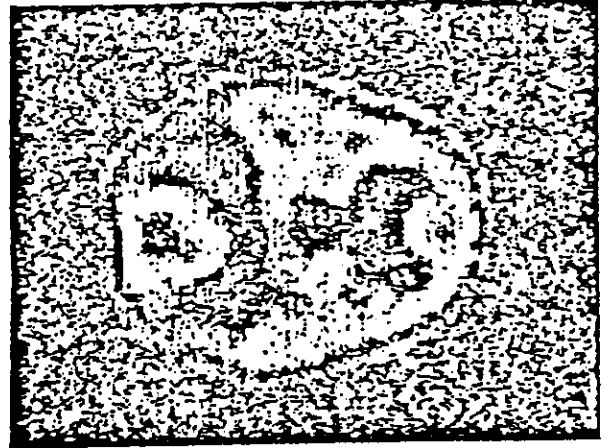
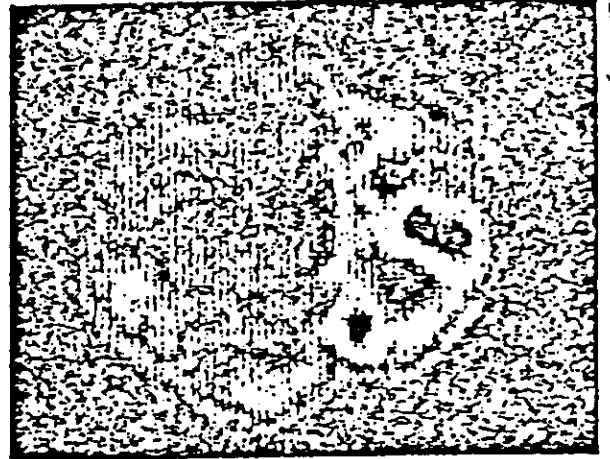
## PART IV: MEDICOLEGAL ISSUES AND SUMMARY

## Medicolegal Issues

In considering the treatment of sex offenders with surgery or with antiandrogenic medications, a number of ethical and medicolegal issues must be addressed. Recently, in an editorial in the *American Journal of Psychiatry*, Dr. Seymour Halleck called for the establishment of guidelines regarding the use of antiandrogenic medications.<sup>124</sup> Two issues of concern to him related to (1) maintaining the constitutional rights of citizens, even those convicted of sex offenses and (2) the question



(A)



(B)

of whether persons facing prolonged incarceration are capable of giving informed consent regarding the use of this form of treatment.

In most democratic societies, individuals are generally free to do whatever they choose, as long as it does not interfere with the rights and well-being of others. When a person's behavior does pose a threat to the well-being of others, as it does when an individual rapes, for example, his freedom and rights are diminished for the common good. Thus, a convicted sex offender does not possess all the rights of a person who has not violated the law.

When an individual represents a threat to the safety of others, there is legal precedent for requiring him to take medication (e.g., measles vaccine). In this sense, then, requiring a convicted sex offender either to take antiandrogenic medications as a condition of probation or to go to prison may not be an unconstitutional violation of his rights.<sup>125</sup> Admittedly, making such a decision can be difficult, but just because the consequences of a decision may be difficult does not mean that one loses the capacity to choose. Cancer patients often have to choose between taking medication and dying.

Paraphilic patients should not be denied access to antiandrogenic medications they wish to take which might be helpful in their treatment. Recently, a prisoner in Maryland successfully petitioned the court for the right to receive such treatment. Administering a properly informed, convicted person medication that may directly benefit him is very different from using him to study the effects of a drug, such as rabies vaccine, unrelated to his personal well-being. Paraphiliacs taking antiandrogenic medications can benefit if (1) they gain greater capacity for self-control, (2) they obtain relief from intrusive erotic obsessional fantasies, or (3) they avoid the necessity for quarantine from the community.

The medical profession needs to make clear the nature of the effects of psychiatric medications in general. They are not administered to control attitudes or behaviors such as those relating to political affiliations. They are not "mind controlling." Rather, they are usually given with the intent of increasing the capacity for self-control and restoring function (such as the ability to determine whether "heard" voices are real or imaginary).<sup>126</sup> Antiandrogenic medications are given in an attempt to increase rather than decrease self-control.<sup>126</sup>

## Summary

Sexual deviation syndromes (paraphilias) are diagnosable psychiatric conditions manifested by (1) recurrent deviant fantasies, (2) intense erotic cravings, and (3) relatively stereotyped behaviors as a response to those cravings. The behaviors are stereotyped in the sense that exhibitionists expose themselves, whereas pedophiles seek out children and transvestites cross-dress. Paraphilic syndromes are not necessarily mutually exclusive, but like conventional heterosexuality, their course is chronic. They may respond to biological treatments and may have associated

organic pathologies (such as Klinefelter's syndrome), but their etiologies are poorly understood.

Sexual offenses, as defined legally, may or may not be perpetrated by persons with one of these syndromes. When offending behavior is related to such a syndrome, (1) intramuscularly administered medroxyprogesterone acetate, (2) orchidectomy to diminish testosterone, or (3) cyproterone acetate may be helpful. However, antiandrogenic medication can only help if the patient is compliant. Orally administered medroxyprogesterone (at a daily dosage of 150 mg) has not been shown to be helpful.<sup>128</sup> It is not known whether antiandrogenic medication can help when offending behavior is unrelated to deviant sexual cravings, as when rape is committed opportunistically or in response to anger and hostility. Stereotyped psychosurgery is still a somewhat controversial option for sexual deviation syndromes at this time. Behavior therapy may help some patients learn how to better resist their urges, but it may work less well with some paraphilic syndromes than with others. When a sex offense is the reflection of a psychiatric illness such as schizophrenia or manic-depressive syndrome, medication treatment appropriate to that condition should be instituted. Legal demands for justice and safety as well as medical concerns for understanding care must both be considered, because each is important. When a person seeks help, his difficulties should be appreciated rather than scorned as perversions.

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