Depo Provera Treatment for Sex Offending Behavior: An Evaluation of Outcome

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Forty men, ages 16 to 78 years, with sex-offending behavior, were treated with combined medroxyprogesterone acetate (MPA), group therapy, and individual psychotherapy. Twenty-three are pedophiles; seven, rapists; and 10, exhibitionists. Five had sex-offending behavior that began after head trauma. The duration of MPA therapy, usual intramuscular dose 400 mg/wk, ranged from six months to 12 years, usually more than two years. These men were compared with a control group of 21 men who refused MPA therapy. They had similar types of sex-offending behavior and were treated with psychotherapy alone with follow-up for a period that ranged from two to 12 years. MPA-related side effects included excessive weight gain, malaise, migraine headaches, severe leg cramps, elevation of blood pressure, gastrointestinal complaints, gallbladder stones, and diabetes mellitus. Of the 40 individuals who took MPA, 10 are still on therapy. Eighteen percent reoffended while receiving MPA therapy; 35 percent reoffended after stopping MPA. In contrast, 58 percent of the control patients, who refused and never received MPA, reoffended. Patients defined as regressed were much more likely to reoffend off therapy than the patients defined as fixated. Other risk factors for reoffense include elevated baseline testosterone, previous head injury, never forming a marriage relationship, and alcohol and drug abuse. In spite of significant medical side effects, maintenance MPA offers benefit for the compulsive sex offender by reducing the reoffense rate.

Throughout the last century a number of countries have utilized castration as a treatment option for sex-offending behavior.[1] Chemical castration or antiandrogen therapy (estrogen) has been used since 1944.[2] In 1966, Money[3] began the first use of depot medroxyprogesterone acetate (MPA) (Depo Provera) to reduce sexual drive in a transvestite pedophile. Since that time, there have been a number of other reports describing MPA treatment at Johns Hopkins[4-8] and elsewhere.[9-14] During the entire period of its use, there has been a raging controversy about the ethics of this form of therapy.[15-19] None of these involves placebo-controlled studies. Only a few centers have reported their long-term treatment outcome,[5] and none has attempted to compare treated offenders with those who refuse treatment.

The treatment program at the University of Texas Medical Branch began in 1977 under the direction of Paul

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Walker, Ph.D., and has been continued at the Rosenberg Clinic by two of the authors (E.E. and C.C.) since 1980. This report is a retrospective study of the Rosenberg Clinic experience using MPA to treat adult male sex offenders from 1980 through 1990.

Materials and Methods

Subjects Out of 153 adult males referred to the Rosenberg Clinic for evaluation of sex-offending behavior, long-term data outside of a prison setting were available on 61 who were offered and encouraged to receive intramuscular MPA therapy in conjunction with the individual psychotherapy and sex-offender group therapy. Forty of these men agreed to receive weekly intramuscular injections of MPA. Twenty-one others refused the medications but participated in other parts of the treatment program to the same extent as those who received the MPA therapy. Ten of the patients who received MPA were part of a previous report concerning 23 patients[13] and after 1980 were cared for by the Rosenberg Clinic. Other individuals not included in this report were suitable for MPA and psychologic therapy but were not able to participate in therapy because of incarceration shortly after being evaluated. Written informed consent for treatment and assessment was obtained for all subjects. The Depo Provera (100 mg/cc) was given either by their private physicians or by the staff in the General Clinical Research Center at the University of Texas Medical Branch. The Upjohn Company provided the Depo Provera for some of the patients. Patient selection is based on a variety of criteria. The patient must admit that his sex-offending behavior is a problem and be willing to undergo treatment. After developing an understanding of the benefits and side effects of the MPA, he must give informed consent for treatment. Because of the outpatient community setting of the treatment, the patients were accepted for treatment only if they did not have severe dyssocial tendencies, e.g., brutal physical assault. The treatment was privately financed, thereby eliminating many individuals from lower socioeconomic groups.

Subject Evaluation Program All patients received an initial psychiatric history, including their detailed sexual history and medical history. Special attention was paid to the family and social history, particularly schooling, difficulty learning, employment history, marital history, alcohol and substance abuse or dependence, physical anomalies, medical illness, and concurrent major mental illness or personality disorders.

In addition, all patients were classified as either fixated or regressed according to the definitions of Groth et al.[20,21] The term "regressed" referred to emotional regression. Regression occurs when an individual who has developed normally to a given point reverts to an earlier point in development that is in some ways more comfortable and more secure than the age-appropriate developmental level. This type of offender tends to be deeply affected by interpersonal dynamics, especially family dynamics. This type of offender's family dynamics play

an important role in determining the situational precursors of the offense and play an important role in the healing process of the perpetrator in the family system. Regressed offenders usually act only with a limited number of victims, usually family members or individuals in a family-like relationship with the perpetrator. These men are typically under the influence of alcohol, have lost their jobs, or have otherwise lost social status. However, this category also included compromising physical or mental illness. Fixated offenders, by contrast, experience an interruption of emotional development that causes sexual development to stop at a particular point. The fixated offender focuses on intrapsychic dynamics and tends to seek nonfamily victims. Usually the fixated offender is imprinted with a certain physiognomy or certain age or sex of victim. He is usually active with a large number of victims who fit his specific sexual criteria.

Only those individuals who agreed to receive MPA were examined physically, including genital measurement. Examination of the genitalia included measurements of the stretched penile length and testicular volume as compared with a series of Prader wooden testicular models calibrated in milliliters. All physical examinations and measurements were done by one of us (E.E.). Their blood was examined for hematocrit, hemoglobin, white blood cell count, differential white blood count, sodium, potassium chloride, bicarbonate, blood urea nitrogen, calcium, phosphorus, uric acid, cholesterol, total triglycerides, alkaline phosphatase, lactic dehydrogenase (LDH), serum glutamic oxaloacetic transaminase (SGOT), serum glutamic pyruvic transaminase (SGPT), testosterone, luteinizing hormone (LH), and follicle stimulating hormone (FSH). A five-hour glucose tolerance test with insulin levels was done to evaluate for early diabetes mellitus. Gallbladder ultrasound studies were also done. Testosterone was measured by radioimmunoassay after separation on an LH-20 column chromatography.[22]

The initial dose schedule of Depo Provera was usually 400 mg/week intramuscular. Further adjustments in the medication were made as the patients were followed clinically. The patients with smaller frames usually required less medication than patients with very large frames and weights, who required as much as 800 mg/week. Usually after six months of MPA therapy, the dose was decreased slowly.

Reoffense An individual was categorized as reoffending if he was arrested for a crime he committed since being on therapy, or if he revealed to the therapist that he was offending. If the defendant was jailed or arrested for a crime committed prior to beginning therapy, he was not considered as having reoffended. Sometimes such an event affected the ability of the patient to have the opportunity to commit a reoffense. In such a case, the individual was not considered in this report. Often the exact date of the beginning of reoffense was not known, and therefore no attempt was made to analyze the data in a life-table

manner, i.e., considering the period of time before reoffense.

Results

Subjects Table 1 lists the demographic data, including mean age, race, source of referral, and type of offense with the group of sex offenders. The patients who accepted MPA therapy were not strikingly different from those who refused on any of the demographic categories. Their ages ranged from 18 to 70 years. Those accepting MPA were slightly younger. Most in both groups were referred by the legal system. The MPA patients were more likely to be self-referred or referred by a physician than the control group. There were some differences in the types of sex-offending behavior. The behaviors committed by each group were predominantly pedophilia and exhibitionism. The MPA treatment group uniquely included seven rapists; the non-MPA group uniquely included one voyeurist.

Table 2 lists the total group of patients according to diagnosis, mean age, mean years of schooling, whether they were fixated or regressed type, abused as a child, whether they were diagnosed as having learning disability as a grade-school child, whether they had a physical or medical problem (including head injury), or used drugs or alcohol. Two pedophiles had micropenises less than 10 cm in length. Medical problems included diabetes mellitus, seizure disorders, and other serious chronic medical problems. Seventy-five percent of the substance abuse was alcohol alone. As expected, fixated patients were more likely to have been abused as a child, and regressed patients were more likely to have physical abnormalities or a concurrent medical problem. Unexpectedly, alcohol played a major role in all diagnostic categories irrespective of fixated or regressed type. The regressed offender often was an exhibitionist. The fixated offender usually was a pedophile. Thirty-two percent of the patients had a concurrent psychiatric diagnosis, usually a personality disorder. Only one patient had concomitant major depressive disorder, and none had psychosis.

Patients who refused MPA therapy did not have physical examinations or blood studies done. Table 3 lists by diagnosis the endocrine profiles of the patients who accepted MPA therapy; both physical and genital measurements as well as the testosterone, LH, and FSH

Table 1
Age, Race, Referral Source, MPA Treatment Status, and Diagnostic Category of Sex Offender Patients

Accepted MPA	Age (years) (mean ± SD)	Race C/B/H* (n)	Source of Referral L/S/M** (n)	Pedophilia (n)	Rape (n)	Exhibitionism (n)	Voyerism (n)	Total (N)
No	37.1 ± 7.4	17/3/1	17/3/1	14	0	6	1	21
Yes	31.1 ± 10.9	36/1/3	19/10/14	23	7	10	0	40

* C = Caucasian; B = Black; H = Hispanic.
** L = legal system; S = self; M = medical.

Table 2
Psycosocial Description and Diagnostic Categories of Sex Offender Patients

	Ages (years) (mean ± SD)	Education (year) (mean ± SD)	Type Fixated (%)	Childhood Disability (%)	Abuse as a Child (%)	Never Married (%)	Alcohol and Drug Abuse (%)	Disability	
								Physical (%)	Mental (%)
Pedophile	34.1 ± 8.3	12.4 ± 1.7	68	15	65	49	27	22	14
Rapist	27.3 ± 8.9	12.1 ± 1.7	86	15	100	58	43	29	15
Exhibitionist	33.4 ± 14.0	11.8 ± 2.4	44	25	25	25	50	32	13
Voyeur	36	12	100	0	100	0	0	0	0
Total group	33.5 ± 10.1	12.2 ± 2.0	69	22	51	51	30	20	14

Table 3
Endocrine Profile (Mean ± SD) of Patients Receiving MPA

Diagnosis	Penis Length (cm)	Testes Size (cc)	Testosterone (ng/dl)	LH (μU/ml)	FSH (μU/ml)
Pedophilia	12.3 ± 2.2	22 ± 4	711 ± 238	8.9 ± 2.3	8.4 ± 3.8
Rape	12.5 ± 2.0	18 ± 6	1026 ± 314	8.0 ± 4.7	19.3 ± 2.6
Exhibitionism	13.4 ± 3.6	21 ± 45	597 ± 263	9.0 ± 4.3	12.3 ± 5.4
Normal males	>10	15 – 25	640 ± 160	8.5 ± 2.3	14.5 ± 4.8

Table 4
Testosterone Concentration by Number of Patients with Each Diagnosis

Testosterone Concentration* (ng/dl)	Standard Deviation*	Pedophilia (n)	Rape (n)	Exhibitionism (n)	All Diagnoses (n)
<320	−3	1	0	1	2
320–480	−2	3	0	4	7
480–800	±1	10	2	1	13
800–960	+2	7	0	2	9
960<	+3	2	5	1	8
Total		23	7	9	39

* Normal adult male testosterone (mean ± SD) = 640 ± 160 ng/dl.

are given by diagnosis. Table 4 displays the distribution of testosterone concentrations in greater detail for each diagnostic category. For the pedophiles and rapists, the distribution of testosterone concentrations was higher than that expected for a population of normal males.

Five patients (four exhibitionists and one rapist) had had a head injury prior to developing sex-offending behavior. Their mean age was 28 ± 4 years. The average testosterone was slightly higher than normal, 882 ± 210 ng/dl. Genital measurements were normal: penis length 14 ± 1.7 cm and testicular size 21.2 ± 4.8 cc.

The average doses and durations of MPA therapy are listed in Table 5 for diagnostic categories, along with the percent of patients with each diagnosis who received other forms of concomitant psychotropic medication. These other medications, tricyclics and phenothiazines, were given in low doses and were

Table 5
Treatment Profile (Mean ± SD) of Patients

Diagnosis	MPA Dose (mg/w)	MPA Duration (years)	Testosterone During Therapy (ng/dl)	Other Therapy	
				Tricyclic (%)	Phenothiazine (%)
Pedophilia	348 ± 79	2.0 ± 2.5	69 ± 46	12	6
Rape	471 ± 149	1.7 ± 2.5	77 ± 96	15	15
Exhibitionism	420 ± 79	6.1 ± 14.6	48 ± 34	19	13

used for agitation and sleep. With MPA therapy, testosterone was markedly reduced, as can be seen in Table 5. Subjects have been followed from six months to 12 years. The dose of MPA was usually 400 mg/week. Follow-up data were available on all patients, including those who stopped therapy, for a duration of at least two years. Plasma testosterone concentrations of patients receiving MPA therapy were generally in the adult female range (<100 ng/dl). At the time of this report, 10 patients are still receiving MPA.

Side effects of the medication included excessive weight gain, malaise, migraine headaches, leg cramps, hypertension, gastrointestinal complaints, gallstones, and diabetes mellitus (see Table 6). Hypertension was recorded only when it was significant enough to require antihypertensive medications; in all instances the elevation was not immediately life-threatening. Gastrointestinal complaints were listed when those symptoms were of a severe enough nature to merit further medical evaluation with an upper or lower bowel series. In both instances, no significant pathology was found. Gallstones were specifically looked for with ultrasound approximately every six months. In most instances, the patient with gallstones was having some concomitant symptoms of gallbladder dysfunction. The diabetes mellitus was overt and required insulin therapy in one patient; the other two met only criteria for diagnosis based on a blood sugar over 200 mg% during a glucose tolerance test. All three individuals were obese.

Table 6
Side Effects of Depo Provera

	Patients (n)	Patients (%)
Excessive weight gain (>10 pounds)	13	33
Malaise	1	3
Migraine headaches	1	3
Leg cramps	2	6
Hypertension	3	8
Gastrointestinal complaints	2	6
Gallstones	4	10
Diabetes mellitus	3	8

Three additional men have been treated with MPA for self-mutilation of their genitalia. On the MPA, one of the three developed gallstones and another had severe migraine headaches. The side effects of MPA have been reported for the entire group and discussed more fully elsewhere in an interim report.[22]

Table 7 displays by diagnoses the reoffense rates for patients who refused MPA, and for MPA-treated men while they were receiving MPA and after they

Table 7
Reoffense Rates

	Patients Refusing MPA (N = 21)		Patients Treated with MPA			
			Off MPA (N = 29)		On MPA (N = 40)	
	n	%	n	%	n	%
Pedophilia	7	50	5	28	3	13
Rape	—	—	2	50	2	39
Exhibitionism	5	83	3	43	2	20
Voyeur	0	0	—	—	—	—
Total group	12	58	10	35	7	18

had discontinued the medication. Reoffense includes rearrest as well as reporting to the therapist a sex-offending act. Many of these acts were nontouching offenses and less serious than the individuals' initial offenses. For instance, a rapist reported exhibitionism or voyeurism. MPA-treated individuals reoffended less while taking the MPA than after stopping the medication. Those who refused MPA therapy initially had the highest reoffense rate. Twelve of the 21 patients who refused MPA have reoffended. Seventeen patients who took MPA have reoffended: 10 reoffended after they had stopped; seven reoffended while they were taking it. Rapists and exhibitionists were the most likely to reoffend.

Pretreatment plasma testosterone concentrations seemed to be linked to reoffense whether on or after discontinuation of therapy (Table 8). Sixty-five percent of those with testosterone concentrations above 800 mg/dl (more than one standard deviation above the mean) reoffended, compared with 22 percent of those with testosterone concentrations less than 480 mg/dl (more than one standard deviation below the mean). When the reoffense rates were examined according to the fixated or regressed type of offender, the reoffense rate in the regressed patients was higher regardless of whether they took MPA (Table 9). This patient group, however, included the head injury patients who also had an 80 percent reoffense rate. They accounted for 66 percent of the MPA-treated regressed reoffenders. Two reoffended as the dose of MPA was being tapered before it was discontinued.

When examined by whether or not the patient had ever married, it was revealed that over 50 percent of the patients who had never married reoffended, compared with less than 50 percent of the patients who married. Also, 57 percent of those who used drugs and alcohol reoffended, compared with 39 percent who did not drink but did reoffend. Another risk factor was identification as a child with a learning disability; 58 percent of those reoffended. Only 38 percent of individuals with a physical disability or medical illness reoffended. Personality disorder diagnoses, such as narcissistic or antisocial personality disorder, predisposed patients to reoffend. In all incidences, the reoffense rate was higher off treatment than on treatment.

Discussion

The reoffense rate of male sex offenders is extremely high. The recidivism rate (measured by rearrest records)

Table 8
Testosterone Versus Reoffense by Number of Patients Who Received MPA

Testosterone Concentration (ng/dl)	Standard Deviation*	No Reoffense (n)	Reoffense off MPA (n)	Reoffense on MPA (n)	Reoffending (%)
<320	−3	2	0	0	0
320–480	−2	5	2	0	29
480–800	±1	10	1	2	23
800–960	+2	2	4	3	70
960<	+3	4	3	1	50
Total		23	10	6	

* Normal adult male testosterone (mean ± SD) = 640 ± 160 ng/dl.

Table 9
Percent Reoffense Versus Fixated or Regressed for Each Patient Treatment Group

	Patients Refusing MPA (%)	Patients Treated with MPA	
		Off MPA (%)	On MPA (%)
Fixated	40	18	18
Regressed	73	45	19

reported by other groups usually ranges from 15 to 35 percent.[23] These statistics are less than half of the actual reoffense rates. For instance, the typical pedophile commits an average of 280 sexual crimes during his lifetime.[24]

Very few other studies have examined reoffense rates of sex offenders treated with MPA.[25] Gagne[11] reported one-year milieu therapy and MPA treatment of 48 men with long-term deviant sexual behavior. Over the three-year follow-up, 40 responded with decreased deviant sexual fantasies and increased control of sexual urges. Two other studies have also reported a very low relapse rate.[26,27] McConaghy et al.[26] reported no differences between imaginal desensitization therapy and/or low-dose 150mg/2w MPA therapy of sex-offending behavior, mainly exhibitionism. All forms of therapy had a relapse rate less than 20%. Langevin et al.[27] also reported a high level of success in treating exhibitionists with assertion therapy alone or plus oral 100–150 mg MPA. He had a drop-out rate greater than 50 percent and demonstrated he could identify a recidivism rate of 36 percent for assertion therapy alone and seven percent for assertion plus MPA. Berlin and Coyle[7] have reported success in a group of 20 paraphiliacs who had maintained MPA treatment for one to six years. Those receiving MPA had a recidivism rate of 15 percent; those who discontinued treatment had a rate of 77 percent. Money,[5,8] in summarizing 13 years of work, indicated that those individuals who had no significant history of substance abuse and had developed pair bonding with a significant other were the most likely to benefit in the long term from the MPA therapy. Those individuals who dropped out of such therapy were likely to reoffend and return to the prison system. The relapse rate was 100 percent for his noncompliant patients and 30 percent for the compliant subjects.

The current paper supports Money's findings. Patients who were compliant

with MPA were much less likely to reoffend than those who refused the medication and those who stopped the medication. Substance abuse and lack of pair bonding were again identified as significant factors in the reoffense.

One important new factor predicting reoffense was the pretreatment plasma testosterone concentration. Reoffense occurred even in those patients who were still being treated with medication and whose testosterone had been lowered below 100 ng/dl. The explanation for this is wanting. The concentration of testosterone of sex offenders at baseline is controversial.[28–30] The current study found an unusual number of high baseline testosterone levels. Other studies have tried to correlate plasma testosterone concentration with violence in sex offenders.[28–30] Nevertheless, these studies are used to justify antiandrogen therapy but do not examine whether these same patients reoffend even on therapy.

Patients who began demonstrating sex-offending behavior after they suffered a head injury present a particularly difficult treatment problem. In 1975, Blumer and Migeon[31] reported the MPA treatment of some of these patients with no increase in seizures and some improvement in impulsive sexual behavior. Subsequently, others have reported successful treatment of these patients in spite of some serious ethical reservations.[32] The ability of these patients to give adequate informed consent has been questioned. In our experience, the patients, as well as their families, should be involved in the consent process.

Other patients with the regressed type of sex-offending behavior also had a higher reoffense rate than their fixated counterparts. Perhaps the fixated individuals who presented for therapy had a more realistic appreciation of their sex-offending problem than regressed individuals who tended to blame their problem on their drinking, loss of job, or other external factor rather than their sexual arousal by an inappropriate stimulus such as a child. Perhaps the regressed are just fixated individuals with a lot of denial. These individuals often reoffended as the dose of MPA was lowered.

The mechanism of action of MPA in reducing sex-offending behavior has always presumably been through lowered testosterone. However, patients have frequently relayed that a higher dose of MPA, such as 400 or 500 mg IM, gave them more symptomatic relief than 100 mg less than that, in spite of the fact their plasma testosterone was unaffected by the change in MPA dosage. This may be due to a sedative-like effect of the medication. McConaghy et al.[26] reported a decrease in trait anxiety. Many of the patients state the medication causes sedation and increases their period of sleep. In the past few years, the sedative-hypnotic properties of progestational agents have been appreciated more, and their mechanism of action has been linked to a progesterone-like receptor on the GABA/benzodiazepine receptor.[33–35] Progestins act to increase the benzodiazepine-like effects of the GABA receptor.

The decreased rate of sex-offending behavior in the MPA-treated group may

be due to a variety reasons that are not secondary to the direct pharmacologic action of the medication. There are minor differences in the patient profiles between those who accepted MPA and those who did not. The MPA-accepting patients were more likely to be physician- or self-referred than those who did not accept MPA. Therefore, those who accepted MPA may have been more trusting of physicians or more highly motivated for help than those who did not. Only a randomized double-blind study can answer these concerns. This study points to the need for further investigation.

The reoffense rates were significant, regardless of treatment group. Some of the other sex-offender treatment programs indicate a comparable reoffense rate.[23] This study attempts to control for the psychological component by providing the same intensity of psychological support for both groups of patients. The psychologic component of this program provides only two treatment sessions per month, one individual and one group. A program with this intensity of therapist-patient contact might be ideal to demonstrate medication effect. However, MPA combined with a more intense psychologic program may further improve the reoffense rate.

Summary

In conclusion, this report demonstrates the efficacy of using MPA to suppress serum testosterone and reduce sex-offending behavior. MPA was not successful in all patients, and it does have significant side effects. However, in the carefully selected, motivated, well-informed patient, MPA seems to be useful in reducing their sex-offending behavior and preventing further victimization.

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