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Androgen Deprivation Therapy in Pedophilic Disorder: Exploring the Physical, Psychological, and Sexual Effects From a Patient's Perspective

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ABSTRACT

Background: The use of androgen deprivation therapy (ADT) shows promising results in the treatment of paraphilic disorders. Although the side effects of ADT can be intrusive, there is no research into the experiences of patients with pedophilic disorder themselves.

Aim: This research aims to explore the psychological, physical, and sexual experiences of ADT from the perspective of sex offenders diagnosed with pedophilic disorder.

Methods: Twelve semistructured in-depth interviews with male adults diagnosed with pedophilic disorder were conducted using a phenomenological approach. Six of the 12 respondents were on luteinizing hormone-releasing hormone agonists and the remaining on anti-androgens. Half of each group were inpatients, and the other half outpatients. The respondents were recruited in collaboration with one psychiatric hospital. The data were analyzed with help of a qualitative software application NVivo.

Outcomes: The respondents described experiences on the use of ADT on a physical, psychological, and sexual level.

Results: The most prominent physical side effects mentioned were bone loss, weight gain, and breast formation. The respondents generally described a positive influence of the medication on their well-being. They felt more relaxed and experienced a reduction in frequency and intensity of sexual fantasies, anger, and aggressive feelings in general. In addition, all the respondents noticed a lower frequency of sexual contact and masturbation. Most of the participants experienced the use of ADT as a mandatory decision made by the treating psychiatrist.

Clinical implications: This study recommends informing patients and their loved ones on the potential side effects of ADT. Furthermore, training forensic counselors on potential side effects of ADT and methods to alleviate them can promote the dissemination of information and will encourage the informed consent procedure.

Strengths & limitations: This is the first qualitative study about the experiences of ADT in men diagnosed with pedophilic disorder in Belgium. Future studies should include more than one treatment center.

Conclusion: The majority of the participants had a positive attitude towards ADT in general. **L Boons, I Jeandarme, G Vervaeke. Androgen Deprivation Therapy in Pedophilic Disorder: Exploring the Physical, Psychological, and Sexual Effects From a Patient's Perspective. J Sex Med 2020;XX:XXX–XXX.**

Key Words: Paraphilic Disorder; Sex Offenders; Treatment; Hormonal Therapy; Anti-Androgens; LHRH Agonists

INTRODUCTION

Pedophilic disorder is one of the 8 specific paraphilic disorders described in the *Diagnostic and Statistical Manual of Mental Disorders* (5th Edition).[1] The phenomenon has become a topic of increased interest in the medical community and the public at large.[2] Although paraphilias can be associated with deviant sexual behavior, they are not necessarily linked with committing offences. In order to be diagnosed with pedophilic disorder, the subject must have reached the age of 16 and has to be at least 5 years older than the victim. A distinction can be made between exclusive pedophilia (ie sexual preference towards children only) and nonexclusive pedophilia (ie sexual preferences towards adults and children). In at least 90% of the cases, individuals with pedophilic disorder are males.[3]

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Treatment of offenders diagnosed with pedophilic disorder results in a major challenge.[4] There is a fundamental tension between the goals of the criminal justice system and mental health care, which respectively unfolds in 2 main approaches to offender rehabilitation: (1) a risk approach that focuses on rehabilitating offenders to reduce recidivism and avoid harm to society, and (2) a mental health approach that is concerned with the treatment of individuals suffering from a disorder.[5,6] Forensic practitioners can be seen as "double agents," which requires them to find a middle ground between protecting the wider society from "offenders" while providing care and treatment for "patients".[6,7] The aims of the treatment of paraphilic disorders in general are (1) controlling paraphilic phantasies and behaviors in order to reduce recidivism rates and further victimization, (2) controlling sexual urges, and (3) decreasing the level of distress in the paraphilic subject. Beside psychological and behavioral treatments, several medicinal options are available.[3,8]

ANDROGEN DEPRIVATION THERAPY

Despite decades of research, the etiology of pedophilia is still unclear and the causes are probably multifactorial.[9] Sexual behavior is influenced by culture and context and depends also on hormonal, genetic, and neural factors.[3,8] Together with dopamine and serotonin, testosterone plays a crucial role in male sexuality including sexual fantasies, urges, and behavior.[3,8,10,11] Testosterone is primary produced in the Leydig cells of the testes and to a lesser extent in the brain and adrenal cortex.[10] Testosterone receptors have been found in different brain areas which are involved in sexual behavior.[11] However, it is not clear how changes in testosterone concentrations are associated with changes in brain activation patterns in general and in sexual offending and paraphilic behaviors in particular.[11] In addition, a recent meta-analysis showed no differences in baseline levels of testosterone between groups of nonsex offenders and sex offenders with paraphilic disorder.[12]

The oldest approach to reduce recidivism of males with sexual behavior problems is surgical castration, which is no longer used in most of the European countries in view of its irreversible character.[3,13,14] Although controlled studies are lacking, a striking reduction in recidivism has been observed after removing the testicles.[15] These positive results led to the development of a more humane and reversible method to achieve the same goal, namely the use of androgen deprivation therapy (ADT).[15,*] ADT combined with cognitive behavioral therapy (CBT) showed promising results in the treatment of sex offenders with paraphilic disorders compared to either treatment as monotherapy.[2,3,8] Sex offenders receiving ADT showed a stronger decrease in dynamic risk factors (assessed with the Stable-2007) after ADT was started.[16] A distinction can be made between 2 types of hormonal treatments, namely anti-androgens and luteinizing hormone-releasing hormone (LHRH) agonists.

Anti-androgens

Anti-androgens consist of medroxyprogesterone acetate (MPA) and cyproterone acetate (CPA). MPA reduces LHRH secretion from the hypothalamus through a negative feedback mechanism which leads to a decrease in testosterone levels.[8] However, a number of side effects such as dyspepsia, nightmares, headaches, muscular cramps, weight gain, gallstones, and diabetes limit the use of MPA in Belgium.[3,17]

CPA binds to androgen receptors and inhibits their effects on sexuality and other body functions. In addition, it leads to decreased testosterone levels by inhibiting LHRH secretion from the hypothalamus.[10] The World Federation of Societies of Biological Psychiatry have reviewed 11 open and controlled studies with approximately 900 male subjects (of whom about 20% were diagnosed with pedophilic disorder).[8] However, all randomized controlled studies on the use of CPA in the treatment of sex offenders are conducted more than 25 years ago.[18] Between 80 and 90% of the cases experienced a significant decrease in sexual fantasies, sexual activity and masturbation, and a disappearance of deviant sexual behavior within 4 to 12 weeks.[3,8,†] The reported undesirable side effects are fatigue, depressive feelings, weight gain, and gynecomastia.[3,8,19–21] Furthermore, authors have shown a moderately increased risk of bone fractures and diabetes mellitus in 40–50% of the cases and a small increased risk of cardiovascular morbidity and depressive symptoms in 10–20% of the ADT users.[22] Metabolic changes may be associated with a higher risk of insulin resistance and hyperglycemia, which can theoretically lead to the development of diabetes.[23] Currently, there seems to be insufficient evidence that diabetes can actually increase under the influence of ADT.[24] Also osteoporosis, hot flashes, impaired glucose tolerance, liver dysfunctions, gastrointestinal complaints, dyspnea, and blood pressure changes have been reported in previous research.[22,25–28] Based on empirical research in transwomen and groups with other androgen-dependent conditions, the European Medicines Agency (EMA) recently published some restrictions in use of CPA due to meningioma risk.[29] Although the risk is very low and occurs especially at high doses (25 mg daily or more), CPA should only be used in paraphilic disorders when other treatments are not appropriate and under close monitoring of physical side effects. As the negative side effects may reduce the quality of life of patients, poor therapy compliance is a major concern with oral CPA.[3]

LHRH Agonists

LHRH agonists offer a treatment option in cases where CPA have not enough effect or caused liver dysfunctions.[10,17] LHRH agonists are the most recent agents used in the treatment of paraphilic disorders and may result in fewer side effects than anti-androgens.[25,30] Moreover, patients treated with anti-androgens reported better effects when using LHRH agonists in

* Also commonly used in the treatment of prostate cancer.

† These beneficial effects on sexual functioning are dose related.

comparison with CPA.[9] LHRH agonists induce a transient rise in luteinizing hormone (LH) and follicle-stimulating hormone (FSH) release which elevates testosterone production. After the first injection, patients should therefore be treated with anti-androgens and LHRH agonists simultaneously to counter this "flare-up effect." Continuing the treatment results in a reduction of LH, FSH secretion and testosterone production.[17] Recently, authors hinted that LHRH agonists, in contrast to CPA, have a significant effect on brain structures which could be a sign that these substances may lead to changes in the paraphilic brain. However, this is a preliminary scientific finding and has not been tested empirically.[10]

LHRH agonists are administered as a depot through intramuscular or subcutaneous injection by a medical practitioner. The injection can be experienced as unpleasant or painful.[31,32] In 2018, authors conducted an updated systematic review on the treatment of paraphilic disorders with LHRH agonists.[10] After analyzing 24 studies reporting on a sample of 256 patients, the study concludes that LHRH agonists are more effective than anti-androgens in lowering paraphilic fantasies and behavior. On the other hand, most of the studies on sex offenders are observational studies or case reports and randomized controlled clinical trials have not been published due to ethical concerns. A quasi-experimental study has shown that sex offenders receiving LHRH agonists were significantly at higher risk of recidivism and more likely to be diagnosed with a paraphilia than subjects receiving CBT only. When comparing a group of sex offenders receiving only CBT (N = 22) with a group of sex offenders receiving LHRH agonists combined with CBT (N = 25), both treated groups recidivated at substantially lower rates than predicted by the Static-99.[33] Recently, a randomized clinical trial on the use of LHRH agonists in men with pedophilic disorder seeking help by contacting a telephone helpline have shown a reduced risk score 2 weeks after the initial injection (N = 25) in comparison with a group receiving a placebo (N = 26).[34]

The most frequent side effects of LHRH agonists are hot flashes, depressive mood, weight gain, fatigue, high blood pressure, diabetes, gynecomastia, bone loss, and erectile dysfunction. Moreover, the use of these substances leads to a reduction of sexual urges, fantasies, and behavior, which are dynamic factors related to a decrease in recidivism.[16,20,35,36] In a study on the clinical effects of LHRH agonists in 7 sexual offenders diagnosed with pedophilic disorder, a decrease of abnormal sexual interests, activities, and fantasies has been noticed after 12 months. Also fatigue, a mild feminization of the body shape, and mild hot flushes were reported.[4]

Ethical Considerations

Despite the existing treatment guidelines,[3,8] the use of ADT in Europe is not uniform as a consequence of different legal statutes regulating the treatment in different European countries.[16] Furthermore, ethical considerations on the use of ADT in the treatment of paraphilic disorders are complex and continuous.[37] In Belgium, patients may only be subjected to ADT if the following conditions of the Belgian Advisory Committee on Bioethics[38] are met:

(1) As sex offenders are a heterogeneous population, the use of a hormonal treatment is only justified in cases of well-determined psychiatric disorders diagnosed by a psychiatrist after a psychiatric examination;
(2) The psychiatrist in charge takes responsibility for the indication, the informed consent and the follow-up;
(3) The hormonal treatment is part of a more detailed treatment program;
(4) The advice of an endocrinologist is required;
(5) There are no less intrusive treatments available;
(6) Continuity of care must be guaranteed.[38]

A person may be subjected to ADT after his informed consent has been obtained.[3,8,38] However, this consent is sometimes given in circumstances where the person is subject to some constraint (eg the choice to remain in prison versus undergo residential treatment in a psychiatric hospital).[3] Side effects of the medication are easier to justify when they are seen as a consequence of a voluntary medical treatment rather than consequence of a coerced consent.[39] ADT must remain a choice made by the patient on the basis of medical advice.[8] It is the responsibility of the psychiatrist in charge to give information on the potential side effects on ADT. In research on cancer patients receiving ADT, authors conclude that the lack of awareness of the side effects may partially explain the decreases in the quality of life in those patients and their partners, as the medication also influence nondeviant sexual behavior.[40] Additionally, there is a lack of knowledge on the possible side effects of ADT and potential methods to alleviate them.[41] In a qualitative study on patients with prostate cancer, researchers conclude that the main experienced difficulties during the hormonal treatments were feminization, sexual dysfunctions, and disruption of spousal intimacy.[42] To the best of our knowledge, qualitative research regarding the use of ADT on sex offenders with pedophilic disorder has not been conducted. This research aims to describe the psychological, physical, and sexual experiences of ADT in depth from the perspective of patients diagnosed with pedophilic disorder.

METHOD

Participants

A total of twelve men (N = 12) between the age of 25 and 74 participated in this study. The participants were treated in a psychiatric hospital[‡] and were approached face-to-face by the first author to participate in this study. None of them refused. The

[‡] Prior to hospital admission, each patient had to sign a treatment contract wherein one of the conditions was to agree with ATD when indicated. This indication was based upon 2 criteria: (1) there must be a well-defined paraphilic disorder as described in the DSM-IV which (2) is combined with an increased risk of recidivism. As the ethical guidelines prescribe, the advice of an endocrinologist was consulted when ADT was considered.

respondents were convicted for hands-on sexual offenses against children and diagnosed with pedophilic disorder, some of them combined with other paraphilic disorders. The diagnoses were made by the treating psychiatrist according to DSM-IV classification[§]. Because we searched specifically for patients treated with ADT (anti-androgens or LHRH agonists), purposive sampling (a sampling technique based on predetermined criteria) was used to select the research sample. 6 patients participated in a residential cognitive-behavioral treatment program, the remaining (n = 6) in an ambulatory cognitive-behavioral treatment program[‖]. In both groups, half of the patients was treated with LHRH agonists and the other half with anti-androgens.

Data Collection and Data Analyses

As research regarding the experiences on ADT from the perspective of sex offenders with pedophilic disorder is lacking, qualitative research seems the most appropriate method.[43] The data were collected using a phenomenological approach. A phenomenological study describes the common meaning for several individuals of their lived experiences.[44] The conducted one-on-one interviews were semistructured, which is recommended for questioning feelings and describing beliefs, perceptions, and personal experiences of individuals in depth.[45,46] The topic list developed by the authors (which is available upon request) aimed to fully explore the participants' experiences and attitudes as detailed as possible. Based on existing literature and the already known side effects, it was relevant to describe the experienced physical, psychological, and sexual effects of ADT in depth and to explore whether the medication was experienced as voluntary or mandatory.

The interviews were conducted in 2016 by a female criminologist (first author) with experience in qualitative methods and counseling of sex offenders. The interviews took place in a separate room[¶] and lasted up to 1 hour. The interview started with an introduction followed by questions on the background characteristics of the respondent, such as birth year, relationship status, and whether the participant was inpatient or outpatient. It then continued with an inventory of the medication use in general as well as the use of antiandrogens and/or LHRH agonists. Subsequently, the general attitudes, the advantages and disadvantages, the informed consent and the physical, emotional, and sexual experiences regarding the use of ADT were questioned. Given the flexible use of the interview protocol, the respondent had the opportunity to add topics. All participants gave permission to make field notes and to record the interviews on tape which reduces the chance of distorting information during the reconstruction of the interview. The verbatim transcriptions (not corrected by the participants) formed the basis of the qualitative analysis material. All the transcriptions were numbered to guarantee the anonymity of the respondents. The audio recordings were later erased, and no interviews were repeated. The following interrelated steps were used to analyze the data:

1) Organizing the data into computer files with help of a qualitative software application NVivo;
2) Reading the data to explore the database;
3) Classifying and interpreting the data into codes and themes: one researcher (first author) and a scientific employee of the university coded 3 transcripts line by line. The coding was compared and the agreement on the coding tree was reached through discussion under supervision of the second and third author. The agreed coding tree was used to code the remaining transcripts.
4) Interpreting the data;
5) Representing and visualizing the data.

Ethical Issues

All respondents were informed by an information sheet and oral explanation before signing the informed consent form indicating that they agreed to be part of this study. Participants were given the opportunity to discuss the study with the researchers and could ask questions before signing the form. For transparency, the interviewer identified the goals of the study namely exploring the effects of ADT from a patient's perspective. It was made clear to all respondents, verbally and in writing, that there were no sanctions or consequences regarding their treatment when they should decide not to participate in this study or to withdraw at any point. For this research, ethical review and approval were obtained from the Social and Societal Ethics Committee of the University of Leuven, the medical ethics committee (EC) of UZ Leuven, and the ethics commission of the psychiatric hospital where the patients were treated.

RESULTS

Consistent with the topic list, the results are divided in 6 overarching themes (1) medication use, (2) general attitude and experienced advantages and disadvantages, (3) informed consent, (4) physical experiences, (5) psychological experiences, and (6) sexual experiences.

Medication Use

Table 1 describes the medication use of the respondents at the moment of the interview. Half of the respondents (n = 6) used CPA. This anti-androgen is administered orally and must be taken daily. The other half of the respondents (n = 6) used triptorelin, a LHRH agonist administered by injection every 12 weeks. It should be noted that one respondent was treated with anti-androgens and LHRH agonists simultaneously during 6 weeks to counter the flare-up effect.

[§] DSM-5 was not yet broadly implemented in most of the psychiatric hospitals in Flanders (Belgium) at the time of data collection.

[‖] After a residential treatment.

[¶] In the psychiatric ward of residential patients and in the living room of outpatients.

Table 1. Medication use respondents

Resp.	Antidepressants	Antipsychotics	Anti-androgens	LHRH agonists
1	Fluoxetine (20 mg/day)			Triptorelin (11,25 mg/12 weeks)
2	Escitalopram (10 mg/day)		CPA (150 mg/day)	
3				Triptorelin (11,25 mg/12 weeks)
4	Fluoxetine (20 mg/day)		CPA (50 mg/day)	
5	Paroxetine (60 mg/day)			Triptorelin (11,25 mg/12 weeks)
6	Venlafaxine (150 mg/day)		CPA (100 mg/day)	
7	Escitalopram (20 mg/day)		CPA (50 mg/day)	
8		Zuclopenthixol decanoate (200 mg/mo)	CPA (50 mg/day)	
9				Triptorelin (11,25 mg/12 weeks)
10			CPA (100 mg/day)	
11			CPA (100 mg/day)	Triptorelin (11,25 mg/12 weeks)
12	Mirtazapine (30 mg/day)	Aripiprazol (5 mg/day)		Triptorelin (11,25 mg/12 weeks)

Anti-androgens as well as LHRH agonists were in 8 cases combined with antidepressants and/or antipsychotics. With exception of respondents 1, 5 and 7, these antidepressants and antipsychotics have been prescribed for purposes other than lowering testosterone namely depression (2, 4, 6, 12) and bipolar disorder (8). With exception of zuclopenthixol decanoate, the antidepressants and antipsychotics were administered orally. All respondents who currently use triptorelin, previously used CPA without efficacy.

General Attitude Towards ADT and Experienced Advantages and Disadvantages

Nine of 12 respondents described positive experiences on ADT in general. According to these patients, the use of ADT was *"an enormous convenience"* and was perceived as a protective factor for relapse among individuals diagnosed with pedophilic disorder. Moreover, the substances ensured calmness and reduced deviant and nondeviant sexual fantasies and the urge towards masturbation, hands-on sexual child abuse, and child porn. Additionally, the respondents emphasized the usefulness of the combination of CBT and ADT because of the insights learned during the former treatment. In total, 3 respondents noticed a positive evolution in their general attitudes towards ADT by using the medication and obtaining information on the side effects of the substances. The other 3 respondents, all treated with CPA, had negative attitudes towards the medication and experience predominantly disadvantages such as sexual dysfunctions and physical side effects. These respondents defended their opinion by stating that *"you don't need your genitals to abuse a child."*

In addition, the respondents were asked to what extent the method of administration and the dosage of the medication had influenced their personal experiences. A distinction was made between a daily oral dosage (CPA) and a 12-weekly injection (triptorelin). Respondents who used the medication orally described no effects on their personal experiences. However, half of the respondents treated with CPA would prefer a higher dosage or an injection with triptorelin to increase the testosterone lowering effects of the medication and to enhance their therapy compliance. Respondents who used triptorelin differ with respect of their experiences. 3 respondents did not experience any problems during or after the injection and described this method of administration as safe given the control of therapy compliance. One patient became ill and miserable and could not continue his daily activities on the day of the injection, which was handled by moving the administration of the injection towards evening hours.

Informed Consent

In addition, the respondents were asked to what extent they experienced the medication as a free choice. Eight of 12 respondents described it as a mandatory decision made by the treating psychiatrist. 6 of them agreed out of fear for being sent back to prison.

> *"We had a choice between cholera and plague. It is either you take those pills or you go back to prison. That is not a free choice. You do not opt for prison, everything is better than prison so just swallow the pills."*

None of the 12 respondents had theoretical knowledge of the side effects of ADT before they started the treatment. Finally, 9 respondents were dissatisfied with the insufficient information about the effects of the medication and potential methods to alleviate them.

Physical Experiences

The majority of the side effects of CPA are reported by the 3 respondents with a negative attitude towards ADT. One respondent reported bone loss, shortness of breath, liver problems, and stomach problems. Moreover, he mentioned he would die due to the use of ADT, as he believed a fellow patient died because of the physical side effects. A second respondent described low blood pressure, fatigue, and heart spasm. In addition, a third respondent reported an increase of his blood sugar level. He also emphasized his dissatisfaction about potential side effects.

Table 2. Physical side effects of CPA

Physical side effects	Positive attitude	Negative attitude	Total
Fatigue	Respondent 8	Respondent 4	2
Breast formation	Respondent 11		1
Low blood pressure		Respondent 4	1
Heart spasm		Respondent 4	1
Bone loss		Respondent 6	1
Shortness of breath		Respondent 6	1
Liver problems		Respondent 6	1
Stomach problems		Respondent 6	1
Increase of blood sugar level		Respondent 10	1

CPA = cyproterone acetate.

"I currently have no breast growth, but if I'll get breasts I'll start a lawsuit. I didn't ask for breasts, I asked for insights."

The other respondents, with a more positive attitude towards ADT, reported fatigue and breast formation[#]. Only one CPA user did not experience any physical side effects. In general, breast formation, fatigue, and shortness of breath were mentioned as extremely bothersome during household chores (Table 2).

The reported side effects of LHRH agonists (Table 3) were different. 4 respondents treated with triptorelin reported weight gain, bone loss, breast formation, perspiration, and pain during the injection. However, some of them blamed the cause of weight gain on overeating and too little exercise. Despite these side effects, all respondents treated with triptorelin had a positive attitude towards to use of ADT. 2 respondents did not notice any physical adverse effects and described the medication use as a *"success story."* Most of the respondents attributed the side effects to CPA or triptorelin, whereas only 2 respondents attributed the physical experiences to the combination of ADT with antidepressants.

Psychological Experiences

Two of 6 respondents using CPA did not experience any influence of the medication on their emotional well-being. One patient felt more relaxed as a consequence of the medication. However, the 3 CPA users with negative attitude towards the medication were fearful for side effects and experienced feelings of guilt towards their loved ones because of the sexual dysfunctions caused by the medication. One of them described depressive feelings due to the medication and lost the passion for life.

Owing to its calming effect caused by the reduction of paraphilic fantasies, angriness, and aggressive feelings in general, all respondents using triptorelin described a positive influence of the medication on their emotional well-being.

"I don't tend to look at children anymore. If I meet children on the street, I just let them pass. My life has been bad enough".

Respondent 11 is treated with anti-androgens as well as LHRH agonists to counteract the flare-up effect.

However, anxiety for future side effects, feelings of embarrassment due to breast formation, weight gain, and mood swings after the injection were described as negative psychological effects.

Sexual Experiences

All outpatients and 2 residential patients had a relationship with a consenting adult. The majority of the respondents concluded that sexuality became not important or less important in their life since they participated in a treatment program. They blamed it on their feelings of guilt due to the committed crimes, the insights learned during CBT and the effects of ADT. However, 4 respondents between the age of 46 and 66 reported that sexuality was very important for them. 3 of them had a negative attitude towards the use of ADT. Additionally, the subjects were asked about the general attitude of their partners towards the medication. Only partners of the respondents with a negative attitude towards ADT had a negative attitude as well.

The frequency of sexual activity (coitus and masturbation) decreased in general. Beside ADT, patients reported other factors influencing their sexual experiences such as the use of antidepressants or antipsychotics, feelings of guilt due to the committed crimes, the time spent in prison, the lack of privacy, the lack of visual materials such as pornography, and the fear of relapse. 3 outpatients treated with CPA still had the possibility of sexual activity with consenting adults. The first one had coitus twice a month without ejaculating. The second one described sexual activity as caressing each other. The third respondent had coitus twice a week. Additionally, one residential patient treated with CPA still reported masturbation.

Five out of 6 respondents treated with triptorelin reported a reduction in frequency and intensity of their sexual fantasies, erectile dysfunctions, and the impossibility of masturbation and ejaculation. Only one outpatient reported coitus twice a week but experienced an enormous decrease of his sexual urges.

"Once in a week is enough for a while since I used to have sex everyday with my ex-wife. Even 3 times a night. I woke her up: 'Hey it is time for me, I want to have sex'. At this moment it doesn't bother me anymore".

Table 3. Physical side effects of triptorelin

Physical side effects	Positive attitude	Negative attitude	Total
Weight gain	Respondents 1, 3, 5		3
Pain during the injection	Respondents 3, 5		2
Breast formation	Respondents 3, 5		2
Bone loss	Respondents 5, 11		2
Perspiration	Respondents 5, 9		2

All the respondents currently treated with triptorelin described that the effect of CPA on sexual fantasies appeared to be inadequate. One patient even committed sexual offences against childeren while using CPA and was very satisfied with the switch to triptorelin.

DISCUSSION AND CONCLUSION

The majority of the respondents described a positive attitude towards ADT in general. The reported advantages are consistent with the aims of ADT stated in the literature, namely the prevention of recidivism, decreasing the level of the patient's distress, and the reduction of sexual fantasies, urges, and behavior.[3,8] Only 3 respondents, treated with CPA, had a negative attitude and experienced predominantly disadvantages such as sexual dysfunctions and physical side effects. Nonetheless, half of the CPA users would prefer a higher dosage or an injection with triptorelin to increase the testosterone lowering effects of the medication and to enhance their therapy compliance.

As mentioned by the Belgian Advisory Committee on Bioethics,[38] a person may be subjected to ADT after his informed consent. However, 8 of the twelve respondents described the use of the medication as a mandatory decision made by the treating psychiatrist. As indicated in previous research,[3,8] consent is sometimes given in circumstances where the person is subject to some constraint. As a refusal of the medication can be seen as a breach of the treatment contract of the psychiatric hospital, half of the respondents gave their consent out of fear for being sent back to prison. Consistent with previous research on cancer patients treated with ADT, none of the respondents had theoretical knowledge of the side effects of ADT.[41] Moreover, the majority of the patients were dissatisfied with the insufficient information about the effects of the medication. Authors conclude that the lack of awareness of the side effects may partially explain the decreases in the quality of life in patients and their partners.[40] It is interesting to note that 3 respondents mentioned a positive evolution in their general attitudes towards ADT by using the medication, experiencing the effects of the medication and obtaining information.

To describe the experiences on a physical, psychological, and sexual level, a distinction was made between respondents who used CPA and respondents who used triptorelin. The majority of physical side effects of CPA were reported by the respondents with a negative attitude towards ADT. The mentioned adverse effects—namely, heart spasm, fatigue, gynecomastia, low blood pressure, bone loss, shortness of breath, liver problems, stomach problems and an increase of the blood sugar level—are consistent with previous research.[3,8,19–22,24–28]

Patients treated with triptorelin reported fewer side effects than patients treated with CPA.[25,30] The most common adverse effect is weight gain, discussed by half of triptorelin users. Moreover, bone loss, breast formation, and perspiration were mentioned. These side effects are in line with previous research.[10] As described by several authors,[31,32] 2 respondents in this study experienced the injection with triptorelin as painful and suggested to inject the substance in the evening.

The psychological experiences of CPA differ regarding the general attitude of the respondents. Patients with a negative attitude towards the medication, in general, were fearful for side effects and experienced feelings of guilt towards their loved ones because of the sexual dysfunctions caused by the medication. In line with previous research,[22] one respondent mentioned depressive feelings. All respondents using triptorelin described a positive influence of the medication on their emotional well-being due to its calming effect caused by the reduction of paraphilic fantasies, angriness, and aggressive feelings in general. However, anxiety for future side effects, feelings of embarrassment due to breast formation, weight gain, and mood swings after the injection were reported as negative psychological effects. These findings are in good agreement with a qualitative study on cancer patients.[42]

In line with previous research, ADT reduces sexual fantasies, urges, and behavior.[3,4,8,10,36] However, 3 respondents described that the effect of CPA on their sexual fantasies appeared to be inadequate and would like to increase their dosage or switch to triptorelin. Although the frequency of sexual behavior and the frequency and intensity of sexual fantasies decreased in general, 4 CPA users and one triptorelin user still had the possibility of sexual activity (coitus or masturbation). Except for one CPA user, all sexually active respondents were outpatients. The difference between inpatients and outpatients may be explained due to the lack of privacy, the lack of visual materials such as pornography and the impossibility of undisturbed visit in the psychiatric hospital. Consistent with previous research, all triptorelin users previously used CPA without efficacy and patients reported better effects when using triptorelin.[3,8,17] In conclusion, several respondents emphasized the usefulness of the combination of CBT and ADT as their sexual urges are decreased but mentioned that their core attraction did not change.[2,3,38]

Limitations

Important limitations of our study should be recognized. Interviewer effects such as characteristics of the interviewer and the interpersonal interaction between the researcher and the respondents during the interviews may have influenced the responses. It should be noted that there was a professional relationship established prior to the study commencement (ie the interviewer was involved in the treatment of the participants as a criminologist in the past). To overcome this limitation, their anonymity was guaranteed, and it was made clear to all respondents that there were no consequences regarding their treatment by participating in this research. Incidentally, there were factors that disrupted the interviews such as background noise and the presence of third parties during one interview (at request of the respondent). Furthermore, the transcripts of the interviews and research findings were not returned to the participants for corrections or feedback, despite it would add validity to the researcher's interpretations. Finally, only one treatment center was involved in this study. As experiences and the administration of ADT may differ depending on the treatment center and the diagnoses of the patients, this study could provide a partial view. However, it could also lead to more comparability since the respondents were treated by the same practitioners.

Recommendations

The findings of this study result in some recommendations for clinical practice and implications for further research, with many thanks to the patients who participated in this study. At first, it is recommended to distribute information brochures concerning ADT in treatment centers, prisons, and on the Internet. Informing patients and their loved ones during an information session may contribute to objective knowledge about the medication. Furthermore, it enhances motivation and therapy compliance, reduces the fear of side effects, and ensures a more positive general attitude towards ADT. In addition, training forensic counselors on potential side effects of ADT and methods to alleviate them can promote the dissemination of information and will encourage the informed consent procedure. Concerning the administration of the medication, it is recommended to inject LHRH agonists in the evening. Lubricating with an anesthetic ointment can decrease the pain. Policy makers should encourage research on ADT as these substances play an important role in recidivism according to the patients themselves. This is the first qualitative study about the physical, psychological and sexual experiences of ADT in men diagnosed with pedophilic disorder in Belgium. Future qualitative studies should include more than one treatment center.

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Lena Boons: Conceptualization, Methodology, Formal Analysis, Investigation, Writing — Original Draft, Writing — Review & Editing; Inge Jeandarme: Conceptualization, Methodology, Resources, Supervision; Geert Vervaeke: Methodology, Supervision.

REFERENCES

1. American Psychiatric Association, American Psychiatric Association. In: Diagnostic and statistical manual of mental disorders: DSM-5. 5th ed. Washington, D.C: American Psychiatric Association; 2013.
2. Hall RCW, Hall RCW. A Profile of Pedophilia: Definition, Characteristics of Offenders, Recidivism, Treatment Outcomes, and Forensic Issues. **Mayo Clinic Proc 2007;82:457-471.**
3. Thibaut F, Barra FDL, Gordon H, et al; the WFSBP Task Force on Sexual Disorders. The World Federation of Societies of Biological Psychiatry (WFSBP) Guidelines for the biological treatment of paraphilias. **The World J Biol Psychiatry 2010; 11:604-655.**
4. Choi JH, Lee JW, Lee JK, et al. Therapeutic Effects of Leuprorelin (Leuprolide Acetate) in Sexual Offenders with Paraphilia. **J Korean Med Sci 2018;33:e231.**
5. Stinson JD, Becker JV. Treating sex offenders: an evidence-based manual. New York, NY: Guilford Press; 2012.
6. Barnao M, Ward T, Robertson P. The Good Lives Model: A New Paradigm for Forensic Mental Health. **Psychiatry Psychol L 2016;23:288-301.**
7. Blackburn R. "What works" with mentally disordered offenders. **Psychol Crime L 2004;10:297-308.**
8. Thibaut F, Cosyns P, Fedoroff JP, et al. The World Federation of Societies of Biological Psychiatry (WFSBP) 2020 guidelines for the pharmacological treatment of paraphilic disorders. **The World J Biol Psychiatry 2020;21:412-490.**
9. Tenbergen G, Wittfoth M, Frieling H, et al. The Neurobiology and Psychology of Pedophilia: Recent Advances and Challenges. **Front Hum Neurosci 2015;9:344.**
10. Turner D, Briken P. Treatment of Paraphilic Disorders in Sexual Offenders or Men With a Risk of Sexual Offending With Luteinizing Hormone-Releasing Hormone Agonists: An Updated Systematic Review. **The J Sex Med 2018;15:77-93.**
11. Jordan K, Fromberger P, Stolpmann G, et al. The Role of Testosterone in Sexuality and Paraphilia—A Neurobiological Approach. Part I: Testosterone and Sexuality. **The J Sex Med 2011;8:2993-3007.**
12. Wong JS, Gravel J. Do Sex Offenders Have Higher Levels of Testosterone? Results From a Meta-Analysis. **Sex Abuse 2018;30:147-168.**

13. Chism L. The case for castration: a 'shot' towards rehabilitation of sexual offenders. **L Psychol Rev 2013;37:193-209**.
14. Lišková K, Bělehradová A. 'We Won't Ban Castrating Pervs Despite What Europe Might Think!': Czech Medical Sexology and the Practice of Therapeutic Castration. **Med Hist 2019; 63:330-351**.
15. Grubin D, Beech A. Chemical castration for sex offenders. **BMJ 2010;340:c74**.
16. Sauter J, Turner D, Briken P, et al. Testosterone-Lowering Medication and Its Association With Recidivism Risk in Individuals Convicted of Sexual Offenses. Sex Abuse. https://doi.org/10.1177/1079063220910723. Accessed January 4, 2021.
17. Briken P, Hill A, Berner W. Pharmacotherapy of Paraphilias With Long-Acting Agonists of Luteinizing Hormone—Releasing Hormone: A Systematic Review. **J Clin Psychiatry 2003;64:890-897**.
18. Khan O, Ferriter M, Huband N, et al. Pharmacological interventions for those who have sexually offended or are at risk of offending. **Cochrane Database Syst Rev 2015;2015:1-73**.
19. Bancroft J, Tennent G, Loucas K, et al. The Control of Deviant Sexual Behaviour by Drugs: I. Behavioural changes following Oestrogens and Anti-Androgens. **Br J Psychiatry 1974; 125:310-315**.
20. Bradford JMW, Pawlak A. Double-blind placebo crossover study of cyproterone acetate in the treatment of the paraphilias. **Arch Sex Behav 1993;22:383-402**.
21. Laschet U, Laschet L. Antiandrogens in the treatment of sexual deviations of men. **J Steroid Biochem 1975;6:821-826**.
22. Giltay EJ, Gooren LJG. Potential side effects of androgen deprivation treatment in sex offenders. **J Am Acad Psychiatry L 2009;37:53-58**.
23. Keating NL, O'Malley AJ, Smith MR. Diabetes and Cardiovascular Disease During Androgen Deprivation Therapy for Prostate Cancer. **JCO 2006;24:4448-4456**.
24. Cheung AS, Pattison D, Bretherton I, et al. Cardiovascular risk and bone loss in men undergoing androgen deprivation therapy for non-metastatic prostate cancer: implementation of standardized management guidelines. **Andrology 2013; 1:583-589**.
25. Czerny J-P, Briken P, Berner W. Antihormonal treatment of paraphilic patients in German forensic psychiatric clinics. **Eur Psychiatr 2002;17:104-106**.
26. Grasswick LJ, Bradford JMW. Osteoporosis Associated with the Treatment of Paraphilias: A Clinical Review of Seven Case Reports. **J Forensic Sci 2003;48:2002089**.
27. Lippi G, Van Staden PJ. The use of cyproterone acetate in a forensic psychiatric cohort of male sex offenders and its associations with sexual activity and sexual functioning. **S Afr J Psych 2017;23:982**.
28. Reilly DR, Delva NJ, Hudson RW. Protocols for the Use of Cyproterone, Medroxyprogesterone, and Leuprolide in the Treatment of Paraphilia. **Can J Psychiatry 2000; 45:559-563**.
29. European Medicines Agency. Restrictions in use of cyproterone acetate due to meningioma risk; 2020. Available at: https://www.ema.europa.eu/en/medicines/dhpc/restrictions-use-cyproterone-acetate-due-risk-meningioma. Accessed January 4, 2021.
30. Bourget D, Bradford JMW. Evidential Basis for the Assessment and Treatment of Sex Offenders. **Brief Treat Crisis Intervention 2008;8:130-146**.
31. Koo KC, Shim GS, Park HH, et al. Treatment outcomes of chemical castration on Korean sex offenders. **J Forensic Leg Med 2013;20:563-566**.
32. Turner D, Basdekis-Jozsa R, Briken P. Prescription of Testosterone-Lowering Medications for Sex Offender Treatment in German Forensic-Psychiatric Institutions. **The J Sex Med 2013;10:570-578**.
33. Gallo A, Abracen J, Looman J, et al. The Use of Leuprolide Acetate in the Management of High-Risk Sex Offenders. **Sex Abuse 2019;31:930-951**.
34. Landgren V, Malki K, Bottai M, et al. Effect of Gonadotropin-Releasing Hormone Antagonist on Risk of Committing Child Sexual Abuse in Men With Pedophilic Disorder: A Randomized Clinical Trial. **JAMA Psychiatry 2020;77:897**.
35. Craig LA, Browne KD, Stringer I, et al. Sexual recidivism: A review of static, dynamic and actuarial predictors. **J Sex Aggression 2005;11:65-84**.
36. Lewis A, Grubin D, Ross CC, et al. Gonadotrophin-releasing hormone agonist treatment for sexual offenders: A systematic review. **J Psychopharmacol 2017;31:1281-1293**.
37. Gooren LJ. Ethical and Medical Considerations of Androgen Deprivation Treatment of Sex Offenders. **The J Clin Endocrinol Metab 2011;96:3628-3637**.
38. Belgian Advisory Committee on Bioethics. Opinion no. 39 of December 18th 2006 on hormonal treatment of sex offenders. Brussels: Federale overheidsdienst Volksgezondheid. Veiligheid van de Voedselketen en Leefmilieu.; 2006. Available at: https://www.health.belgium.be/en/opinion-no-39-hormonal-treatment-sex-offenders. Accessed January 4, 2021.
39. Harrison K. Legal and ethical issues when using antiandrogenic pharmacotherapy with sex offenders. **Sex Offender Treat 2008;3:1-11**.
40. Walker LM, Tran S, Wassersug RJ, et al. Patients and partners lack knowledge of androgen deprivation therapy side effects. **Urol Oncol Semin Original Invest 2013;31:1098-1105**.
41. Templeton HRM, Coates VE. Development of an education package for men with prostate cancer on hormonal manipulation therapy. **Clin Effectiveness Nurs 2003;7:33-42**.
42. Navon L, Morag A. Advanced Prostate Cancer Patients' Ways of Coping with the Hormonal Therapy's Effect on Body, Sexuality, and Spousal Ties. **Qual Health Res 2003;13:1378-1392**.

43. Elmir R, Schmied V, Jackson D, et al. Interviewing people about potentially sensitive topics. **Nurse Res 2011;19:12-16.**

44. Creswell JW, Creswell JW. Qualitative inquiry and research design: choosing among five approaches. 3rd ed. Los Angeles: SAGE Publications; 2013.

45. Silverman D. Doing qualitative research: a practical handbook. 3rd ed. London; Thousand Oaks, Calif: SAGE; 2010.

46. Flick U, ed. The Sage handbook of qualitative data collection. Los Angeles: Sage Reference; 2018.