

PUBERTAL EFFECTS OF SEXUAL ABUSE AND TREATMENT WITH HALOPERIDOL IN PREPUBERTY

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Abstract:

The sexual abuse occurred during childhood or puberty has complex effects relating to the child development process. Whereas the post-traumatic stress disorder is the most frequently reported consequence of rape, the biological and psychological development of the sexual abuse victims is still subject to research and often an objective of the forensic medical examination of the sexually abused minors.

Key Words: puberty, sexual abuse, Haloperidol

Introduction

The sexual abuse (SA) occurred during childhood or puberty has complex effects relating to the child development process. Whereas the post-traumatic stress disorder (PTSD) is the most frequently reported consequence of rape (Deykin, 1999), the biological and psychological development of the SA victims is still subject to research and often an objective of the forensic medical examination of the sexually abused minors.

During prepuberty and puberty, the somatic and sexual development is *endocrinologically* influenced by the hypothalamic-pituitary-adrenal (HPA) axis activity. The dysfunction of the HPA axis activity is known in literature to have been reported after exposure to SA (De Bellis, 1994), as an effect of the treatment with *haloperidol*, and in the pathophysiology of PTSD (Carrion, 2002, Gunnar, 2007).

Prepuberty is marked by the *hypothalamic* expression and nocturnal gonadotropin-releasing hormone (GnRH) secretion, followed by the secretion increase from the anterior *pituitary gland* of gonadotropin hormones (GnH), (LH, stimulant of testosterone secretion, and FSH, stimulant of spermatogenesis), STH, a hormone favouring the somatic development, and PRL (prolactin) which inhibits GnRH and GnH secretion. With a *premature testicle*, PRL plays an important part in the

regulation of the testosterone synthesis (Dunkel, 2001); long-term hyper PRL during the prepubertal period may lessen or delay the androgen secretion and lead to weight loss (Maric, 1982) having an impact on **puberty** (delayed puberty, impotence and infertility in boys).

Haloperidol, the Dopamine antagonist, a neuroleptic drug used in child treatment against behavioral disorder, psychomotor agitation, depression; among its effects it includes hyper PRL (*Agenda medicală – The Medical Agenda*, 1998); the dose per day of 2 – 5 mg administered to boys led to hyper PRL and removal of LH secretion, without affecting the growth hormone or the development of the secondary sex characteristics (Caine, 1979). Hyper functional PRL is maintained as long as the medicine is present in the body.

Prepubescents (10, 7 years old) showing symptoms of **PTSD following a SA** presented an increase of the HPA axis activity with **adrenergic** response (Carrion, 2006) and the **atrophy in the right hippocampus** was the specific way to react in time for sexually abused children (Bremmer, 2000), coexisting with diverse symptoms (discouragement, disgust, learning difficulties).

Different symptoms may develop in time from sexual abuse; therefore before the diagnosis of PTSD is made the child may get 1 – 8 diagnoses as well as ineffective treatments for his/her suffering. For PTSD in children the pathognomonic symptoms would be of Grade D (Ween, 2003).

Purpose of the paper: demonstrate the need of complex investigation after sexual abuse in prepubertal children.

Short history of the case: M.C., 10 years 4 months old, a mediocre pupil raised in a caring family, was repeatedly sexually abused by three juvenile neighbours. For 4 years he developed symptoms of emotional impairment but also decrease in learning ability and performance in school, as well as alteration of family relationships. He was recommended a treatment with haloperidol and anti-depressants. His mother, on her own initiative, administered him haloperidol for 30 months. 4 years after the sexual abuse, the 15-year old boy underwent a forensic medical psychiatric examination and the diagnosis of chronic PTSD was made.

Peculiarities of the case

A. The repeated psychosexual and physical trauma, the abusers were a permanent presence for 4 years.

B. Only the intensely expressed symptoms from sexual abuse were treated (depression, anxiety, agitation) instead of the PTSD, the affection the child had developed.

C. At the court request, a full evaluation of his puberty was performed after the prepubertal sexual abuse.

Material and method: two sets of data related to prepuberty and puberty were compared:

a) The medical certificates issued by the adult psychiatrist; the psychodiagnosis certificate and his Medical Records, documents covering the period between 10 years 4 months and 12 years of age;

b) The medical chart from the Child Psychiatry Section of the Psychiatry Hospital in Iasi and the forensic medical psychiatric examination, documents which were issued when the child was 15; the results of the examinations undergone at the age of 15 were reported to meet the set standards in forensic medicine:

1. Somatic development: height, weight, PCM according to age and sex (according to Onoriu Coman's tables):

	Normal	Child
Height	159 cm	160 cm
Weight	49,5 kg	39 kg
Perimeter of the skull	54 cm	53 cm

Table 1. Somatic development. Source: Onoriu Coman's tables

2. Pubertal age (radiograph of the wrist): the bone age according to the chronological age).

3. Sexual development

	Testicle	Penis	
Age	Length and width mm	Length cm	Circumference cm
1 – 9 years old	15 x 12 mm	4 – 6 cm	3,6 – 4,4 cm
15 years old	36 x 26 mm	11,8 cm	7,6 cm
15 year old child examined	15/12 mm soft testicles	5 cm	4 cm

Table 2. Sizes of testicles and penis (after Job and Pierson, cited by Ionescu, 1987)

The scrotum without rugae, nonpigmented, with a few hairs on it; poor pubic and axillary hair, absent facial hair. High pitched voice, undeveloped mammary region. He denies nocturnal pollutions or erotic dreams. Low heterosexual interest.

Pubertal development stage of the secondary sexual characteristics (after Tanner, cited by Ionescu, 1987): Stage I – prepubertal.

Clinical endocrinological diagnosis: delayed puberty, hypogonadism.

Hormonal dosage:

Hormones	Results	Measurement unit	Biological reference interval
Testosterone	1,5	ng / ml	B: 2,0 – 6,9
FSH	2,5	mUI / ml	B: 2 – 10
LH	4,0	mUI / ml	B: 3 – 12

Table 3. Hormonal dosage

The hormonal dosages invalidated the diagnosis of hypogonadism.

4. Intellectual development Raven test: IQ = 87.

5. Psychological and psychiatric consequences after the sexual abuse

At the age of 12 the psychological examination (projective tests, DUSS fables, drawing, clinical interview) highlighted the following: signs of sexual abuse with the insertion of a foreign body into the anus and oral sex (drawings – Picture 1), fears and phobias related to the places where the child had been abused in the story he imagined (“the child is afraid to go to the store”, the road to the store passes by abusers’ house). The fear he could have died during the abuse, anxiety and distressing dreams about the train (the abusers took him to the railway station where they tied up his arms and legs and then sexually abused him); accept the isolation from other children (“A puppy goes out to play and comes back crying. What’s happened, his father asks. The other dogs bit me. Then play inside. The puppy understood and from then on he never had any problems.”) Two years after the sexual abuse, the child feels shame and fear, depression and helplessness.

Psychiatric examination at the age of 15: syntonic, detached at the beginning of the discussion; his mimics, voice tone and speech fluency were affected when making an allusion to the sexual abuse, expressing feelings of deep humiliation, shame and obvious wish to change the subject. Since then the child had always been self-doubting, ambivalent, deeply insecure about himself. He confessed about how he avoided other children’s company and secluded himself in household duties; he explained his repeated school-related failures through hypomnesia, thought blocking generated by nervousness, frequent states of sadness when recalling the acts of aggression, unrestful sleep, and nightmares including episodes of delirium related to traumas. He declared he felt he had changed because for 4 years he could not go shopping alone, he always felt fear and horror when passing by the abusers’ house in the neighborhood, or talking about what had happened to him.

Psychological and psychiatric examination: Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA) (Nader 2004, Ohan 2002) may also be used in a forensic medical examination. The scale (Picture 1) used in this case points out:

- Criterion A: physical trauma, various repeated sexual abuses confirmed by the drawing (Picture 2);

- Criterion B: terrifying dreams, repetitive episodes from the act of aggression;
- Criterion C: impossibility to tell what happened, explaining by drawing, lack of social interaction with other children of his age, despair of not seeing any future;

A. Traumatic event:								
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B. Reexperiencing symptoms	CURRENT				LIFETIME			
	Freq	Int	F + I	T-R	Freq	Int	F + I	T-R
1) intensive recollections								
2) distressing dreams								
3) acting or feeling as if event were recurring								
4) psychological distress at exposure to cues								
5) physiological reactivity on exposure to cues								
B subtotals								
NUMBER OF CRITERION B SYMPTOMS (NEED 1)	NO YES NA				NO YES NA			

C. Avoidance and numbing symptoms	CURRENT				LIFETIME			
	Freq	Int	F + I	T-R	Freq	Int	F + I	T-R
6) avoidance of thoughts, feelings, conversations								
7) avoidance of activities, places, or people								
8) inability to recall important aspect of trauma								
9) diminished interest or participation in activities								
10) detachment or estrangement								
11) restricted range of affect								
12) sense of a foreshortened future								
C subtotals								
NUMBER OF CRITERION B SYMPTOMS (NEED 3)	NO YES NA				NO YES NA			

D. Hyperarousal symptoms	CURRENT				LIFETIME			
	Freq	Int	F + I	T-R	Freq	Int	F + I	T-R
13) difficulty falling or staying asleep								
14) irritability or outbursts of anger								
15) difficulty in concentrating								
16) hypervigilance								
17) exaggerated startle response								
D subtotals								
NUMBER OF CRITERION B SYMPTOMS (NEED 2)	NO YES NA				NO YES NA			

E. Duration of disturbance	CURRENT			LIFETIME		
19) duration of disturbance at least one month	NO YES NA			NO YES NA		

F. Significant distress or impairment in functioning	CURRENT			LIFETIME		
	Freq	Int	F + I	Freq	Int	F + I
20) overall distress						
21) impairment in social functioning						
22) impairment in scholastic functioning						
23) impairment in developmental functioning						
F subtotals						
AT LEAST ONE >2 ?	NO YES NA			NO YES NA		

Global clinical ratings	CURRENT			LIFETIME		
24) global validity						
25) global severity						
26) global improvement						

Associated features	CURRENT				LIFETIME			
	Freq	Int	F + I	T-R	Freq	Int	F + I	T-R
27) guilt over acts of commission or omission								
28) survivor guilt								
29) shame								
30) reduction in awareness of surroundings								
31) derealization								
32) depersonalization								
33) changes in attachment								
34) trauma – specific fears								

Fig. 1. CAPS-CA Form2 (Diagnostic) SUMMARY SHEET

- Criterion D: sleep derangement, hypoprosexia, irritability, outbursts of anger;
- Criterion E: the symptoms last for 4 years;
- Criterion F: lack of interest in spending time with colleagues, ongoing decrease of school performances, retard in the sexual development and sexual behavior specific to his age, inappropriate body weight.

Associated manifestations: shame, fear of the abusers, guilt towards the parents.

Koch Stora Test: Ambivert specific nucleus including depressive elements and need of protection. Basis of attachment present. Immaturity. Impairment in social interaction in need of affection. Irritability and nervousness with an explosive character. Sociability: insecurity and fear, feeling of inferiority, docility.

Family test: the child does not feel to be part of his family. The family crisis felt by the patient can be noticed in the drawing (he draws his father apart from the others). Inert attitude. Tendency to make himself useful and meet the social and parental expectations (feelings of guilt).

Verbal-associate test: repeated recollections of the trauma ("things that happened a long time ago"). Phobias and emotional discomfort (I would have done anything to forget it"). Feelings of shame, anxiety, distress (I will be the happiest man when this ordeal is over", "I feel ashamed when people look at me").

The diagnosis made was post-traumatic stress disorder and post-traumatic inhibition (through repeated emotional, physical and sexual abuse) of the somatic expression of the sexual development.

CONCLUSIONS:

1. HPA axis activity in prepuberty was disturbed by the triple action of long-lasting sexual abuse, PTSD and prolonged treatment with haloperidol.
2. The effect of haloperidol was temporary, the secretion of gonadotropin hormones continuing in puberty.
3. Chronic PTSD after exposure to SA in prepuberty led, during puberty, to the following:
 - a. disturbed sexual development (puberty indicated by bone age; the concentration of sexual hormones contrary to the prepubertal external genital organs; absence of secondary sex characteristics and age-specific sexual behavior);
 - b. impaired somatic development (as to height and weight);
 - c. disrupted social and psychic life, school education;
4. PTSD after exposure to SA, as well as the haloperidol, delayed the onset of puberty;
5. Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA) in the forensic medical examination is the first step of complex medical assessment and progress against disease after exposure to SA.

REFERENCES:

1. Agenda Medicală 1998, Editura Medicală.
2. Caine, E. et al – „Neuroendocrine effects of Haloperidol in an adolescent with Gilles De La Tourettes disease and delayed onset of puberty” J. Nerv:Ment. Dis., 1979, 167 (8): 504-507.
3. Carrion, V., Weems, C., Raya, R., Helsa, D., Allan, Reiss, „Diurnal Salivary Cortizol in Pediatric Posttraumatic Stress Disorders”, Biol. Psychiatry, 2002, 51 (7):575-588.
4. Carrion, V., Weems, C., Reiss, A., „Stress Predicts Brain Changes in Children – A Pilot Longitudinal Study on Youth Stress Posttraumatic, Stress Disorders and the Hippocampus” Pediatric 2007, 119 (3):509-516.
5. De Bellis, M. G., Chrousos, Dorn, L., Burke, L., Helmers, K., Kling, M., Trickett, P., Frank, W., Putmann, N., „Hypothalamic Pituitary Adrenal Axis Dyregulation in Sexual Abuses Girls” J. Clinical Endocrin and Metab 1994, 78 (2): 249 -255.
6. Deykine, Yona, „PTSD in Childhood and Adolescence” A Review, Med Scape Med. J., 1994, 4(4), Med Scape Psychiatry & Mental Health Journal, 4(3), 1999.
7. Dunkel, L., Huntaniemi, J., „Abnormal Prolactin Secretion in Prepubertal Boys with Hypogonadotropic hypogonadism – Possible Involvement in Regulation of Testis Steroidogenesis” J. of Child and Adolescent Psychopharmacology 2001, 11 (4), Intern. Journal Andrology, 1985, oct. 8(5), 385-392.

8. Gunnar, M., Quevedo, K., „Early Care Experience and HPA Axis Regulation in Children: a Mechanism for Later Trauma Vulnerability „ Prog. Brain Res., 2007, 167: 137 – 149.
9. Ionescu, B., Dumitrache, C., „Sexualizarea normală și patologică”, Ed. Med., București, 1987.
10. Maric, D. et al „ Effects of Short Term and Long Term Hyper Prolactinemia on the Developmental Pattern of Androgen and LH Level in the Immature Male Rat” J. Endocrinol. Invest, 1982, 5: 235-241.
11. Marty, M., Crissman, W., Carney, W., „Evaluation of the Male Pubertal Assay’s Ability to Detect Thyroid Inhibitors and Dopaminergic Agent „Toxicology and Environmental Research and Consulting, 2000, Toxicological sciences, 2001, 60: 285 – 295 (2001), Medline, 2000.
12. Nader, K. O., Assessing Traumatic Experiences in Children and Adolescent: Self – Reports of DSM PTSD Criteria B-D Symptoms. In J. Wilson et T. Keane (Eds.), Assessing Psychological Trauma and PTSD, 2nd ed. 2004 (pp. 513 – 537), New York: Guilford Press.
13. Ohan, J., Myers, K., Collett, B. R., Ten Year Review of Rating Scales. IV: Scales Assessing Trauma and its Effects. J. Am Acad Child Adolesc Psychiatry, 2002, 41 : 1401 -1422.
14. Ween, K., Saltzman, K., Reiss, A., Carrion, U., „Brief Report. A Prospective Test of the Association Between Hyperarousal and Emotional Numbing in Youth With a History of Traumatic Stress” J. Of Clinical Child and Adolescent Psychology, 2003, 32: 166-171.