CORRELATION OF FEMALE SEXUAL DESIRE DISORDERS ACCORDING TO DSDS QUESTIONNAIRE (Decreased Sexual Desire Screener) WITH SALIVARY TESTOSTERONE LEVELS IN SURGICAL MENOPAUSE

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Abstract

Objective: To determine the relationship of salivary testosterone levels with sexual desire.
Method: This study was an observational analytic study with a case control study approach using the Decreased Sexual Desire Screener (DSDS) questionnaire with a total sample of 54 women divided into case groups: 27 surgical menopausal in the H. Adam Malik General Hospital and Pirngadi Hospital with control group consisting of 27 normal women who met the study criteria. Patients who were according to the inclusion criteria were examined blood FSH levels (for surgical menopause) and testosterone saliva obtained from the patient's saliva sample. Then interviews were carried out with DSDS questionnaire. Data were analyzed and the test was considered significant if the P value <0.05.
Result: Based on the results of the study it was found that the mean FSH level in the case group was 59.29 mIU / ml with SD = 15.15 mIU / ml. The average testosterone level in the case group was 22.41 pg / ml while in the control group it was 44.22 pg / ml with a p value <0.001. In the group of subjects with surgical menopause there were 20 people (74.1%) having a sexual desire disorder, while in the control group there were only 5 people (18.5%) who had a sexual desire disorder with a p value <0.001 (OR= 12.571, 95% CI = 3,434 - 46,018). Subjects of women with surgical menopause had a risk of 12,571 times experiencing sexual desire disorders compared to the control group.
Conclusion: There was a significant correlation between salivary testosterone levels with sexual desire disorders.

Keywords: Sexual desire Disorder, Decreased Sexual Desire Screener, Salivary Testosterone, Menopause

Background

Sexual desire or sexual desire is a complex problem associated with sexual dysfunction, sexual desire is associated with many factors that influence it. Low sexual desire, common in women, and the prevalence tends to increase following bilateral oopherectomy. Steroid sex hormones have an important influence on female sexuality. Androgens are important for stimulation of sexual motivation such as desire, fantasy and arousal, maintain optimal sexual function and have an influence on sexual satisfaction. Associated with an increased life span, the age of menopause is becoming more and more. Surgical menopause is said to be a condition in which the removal of both ovaries (bilateral oopherectomy) before a woman experiences her natural menopause. [1,2,3,4]

In bilateral oopherectomy procedures, testosterone and androstenedione drop dramatically by around 50% and women who undergo this procedure experience a decrease in sexual relations compared to women who undergo hysterectomy alone.[2,5]

Recently, testosterone testing from the salivary compartment has been proposed as an alternative method for measuring biologically active

testosterone. Theoretically, saliva is an excellent medium for the measurement of steroid hormones because they are fat soluble, and hormones that are not tightly bound to the carrier protein in free blood diffuse into saliva.[6]

Female sexual dysfunction is a complex clinical diagnosis. DSM-IV and ICD-10 states the need for personal distress (personal distress) in sexual disorders, so that it can be diagnosed as a sexual disorder that causes dysfunction. Decreased Sexual Desire Screener (DSDS) questionnaire is a relatively easy assessment tool used to detect decreased sexual desire or Hypoactive Sexual Desire Disorder (HSDD).[7]

Method

This study was an observational analytic study with a case control study approach using the Decreased Sexual Desire Screener (DSDS) questionnaire and was conducted at RSUP H. Adam Malik General Hospital and RSUD Dr. Pirngadi Medan from November 2019 to March 2020.

Results

The study was followed by as many as 54 women who were divided into groups of cases, namely 27 surgical menopausal women who had undergone bilateral salphiongoopherectomy with / without hysterectomy at H. Adam Malik General Hospital and Dr. Pirngadi Medan and a control group consisting of 27 normal women (without surgical menopause) who met the study criteria.

Most of the subjects in the two groups aged 31-40 years, as many as 13 people (48.1%) in the case group and 14 people (51.9%) in the control group. The majority of education in the control and case groups was high school with 17 people (63%). The most parity in the case group was nullipara with 9 people (33.3%), and in the control group was multigravida as many as 14 people (51.9%). The majority of subjects in the two groups had normoweight and overweight BMI, 19 people (70.3%) in the case group and 22 people (81.4%). There were no significant differences in age and BMI characteristics between the case and control groups ($p > 0.05$).

The duration of menopause in the case group was 10 people (37%), namely for <6 months and 1-2 years. 20 subjects (74.1%) had hysterectomies in the case group. The mean FSH level in the case group was 59.29 mIU / ml with SD = 15.15 mIU / ml.

The average testosterone level in the case group was 22.41 pg / ml while in the control group it was 44.22 pg / ml. Using the Independent T test showed that there were significant differences in testosterone levels between the case and control groups ($p < 0.001$).

In the group of subjects with surgical menopause there were 20 people (74.1%) experiencing sexual desire disorders, while in the control group there were only 5 people (18.5%) who experienced sexual desire disorders. Using the Chi Square test showed that there were significant differences in the proportion of sexual desire disorders between the case and control groups ($p < 0.001$). The OR value obtained was 12,571 (95% CI 3,434 - 46,018). This shows that female subjects with surgical menopause had a risk of 12,571 times having a sexual desire disorder compared to the control group.

In the group of subjects who had undergone surgical menopause, it was known that the average salivary testosterone level was 18.97 pg / ml (SD = 7.68 pg / ml) whereas in the group without sexual desire disorders with a higher mean of 32.24 pg / ml (SD = 11.38 pg / ml).

Using the Independent T test showed that there was a significant relationship between salivary testosterone levels and sexual desire disorders in the group of women with surgical menopause (p = 0.002).

In the group of subjects without surgical menopause, it was known that the mean salivary testosterone level was 12.21 pg / ml (SD = 4.82 pg / ml) whereas in the group without sexual desire disorders with a higher mean of 51.49 pg / ml (SD = 25.78 pg / ml). Using the Mann Whitney test showed that there was a significant relationship between salivary testosterone levels and sexual desire disorders in the group of women who did not undergo surgical menopause (p = 0.001).

Salivary testosterone levels in the case group were seen to be higher than the control group with an average of 18.97 pg / ml compared to 12.21 pg / ml, but the results of the Independent T test showed that no significant difference was found in salivary testosterone levels between the two study groups (p = 0.076).

Most of the subjects in the two groups aged 31-40 years were (50%) in the case group and 3 people (60%) in the control group. The majority of subjects in the two groups had normoweight and overweight BMI, 17 people (85%) in the case group and 4 people (80%) in the control group. The majority of research subjects in the two groups had a high school education of 11 (55%), and as many as 2 people (40%) in the natural group. The most parity in the case group was nullipara and multiparity by 6 people (30%), in the control group was multiparity with 4 people (80%).

With Chi Square analysis test, it was found that there was no significant relationship between the duration of surgery and sexual desire disorders, with a value of p = 0.342 (p> 0.05). The mean testosterone value was 22.4 ± 10.4.

With the T-independent analysis test found a significant relationship between the duration of surgery with testosterone saliva levels with a value of p = 0.002 (p> 0.05).

Discussion

In line with the study conducted by Farquhar et al (2006) in patients undergoing oophorectomy with or without hysterectomy, the age group of the subjects was 41-45 years (45% vs 42%) with no significant differences (p> 0.005). Based on BMI, the highest BMI results were normoweight in group 1 who underwent hysterectomy only (53%), while in group 2 who underwent hysterectomy and bilateral oophorectomy, the highest BMI was overweight (53%) with no significant differences (p> 0.005) .[8]

Previous studies have shown that, after bilateral oophorectomy, the cycle of FSH levels in women rises earlier than LH. This suggests that FSH is more sensitive to ovarian feedback.[9] Metabolic clearance studies show that FSH and LH secretion levels are higher during the follicular phase than during the luteal phase. The increase occurred immediately after ovarian removal surgery, FSH and LH concentrations rose rapidly in the follicular phase while in the luteal phase the concentration rose slowly. Increases in total FSH levels are higher than in serum LH after surgery in both phases of the cycle.[9,10]

In a study by Smail et al. there were 28.6% of the menopause sample of high school graduates, 27.1% of elementary school graduates and 25.7% of university graduates.[11]

Research by Appiah showed that the majority of samples that performed a hysterectomy without ooferectomy by 33.9% were nullipara, followed by 25.2% sekundipara, 21.9% primipara and 19%

multipara. Whereas the samples that underwent hysterectomy and bilateral ooferectomy showed 32.7% of primiparous patients followed by 29 & nulliparous, 26.2% sekundipara and 12.1% multiparous.[12]

In line with research conducted by Kotsopoulos (2015) found that among postmenopausal women, plasma testosterone levels were significantly lower in women without ovaries compared to women who had both intact ovaries (geometric mean: 15.4 ng / dL vs 20 , 8 ng / dL; P <0.0001). While geometric mean testosterone levels did not differ from oophorectomy times (15.4 ng / dL vs 15.6 ng / dL for premenopausal and postmenopausal oophorectomy, respectively, P = 0.80. Free testosterone patterns were similar to levels that were independently significantly lower among women who had oophorectomy compared to those who experienced natural menopause (P <0.0001) .[13]

A study conducted by Samanta et al (2015) found a decrease in average testosterone levels from 0.11 ng / ml during preoperative surgical menopause to 0.09 ng / ml after surgical menopause surgery, this reduction was found to be statistically insignificant (p > 0.05). This seems to contradict the findings of other studies. It can be surmised that even after surgical menopause, the ovaries stop being the site of testosterone secretion, circulating testosterone levels may not change significantly due to the synthesis and secretion of fat cells from adrenal hormones.[14]

In a study conducted by Turna et al (2005) comparisons for the total FSFI (Female Sexual Function Index) score between menopausal and control patients showed a statistical difference (P <0.05). When the FSFI domain (desire, arousal, lubrication, orgasm, satisfaction, pain) were compared separately for patients and healthy women, there were significant differences between the two groups in all FSFI components except pain (P <0.05) .[15]

Hypoactive sexual desire disorder (HSDD) is one of four common forms of sexual desire disorders in women defined in DSM-IV and characterized by chronic or recurring deficits in or lack of desire for sexual activity that causes personal stress. A study by Simon et al (2005) in women with HSDD with a history of surgical menopause found free and total average serum concentrations of testosterone were similar in the two study groups at baseline and increased in the group treated with testosterone after 24 weeks of treatment.[16]

The study conducted by Guay et al obtained a significant proportion (70%) of women with low sexual desire studied who had decreased levels of total testosterone, free testosterone, and DHEA-S. Nonetheless, premenopausal women with androgen deficiency who do not use birth control pills with regular menstrual periods, show normal ovarian function. This reinforces the theory that the problem of low sexual desire lies in the adrenal gland, where DHEA-S is produced. In a study conducted by Turna et al (2005) in premenopausal and menopausal women who had decreased sexual desire for 6 years, the average age of the patient population and control group was 45.3 ± 10.9 years (range 24-70 years) and 42.6 ± 12.6 years (range 21-60 years). The mean BMI values for premenopausal control, premenopausal patients, postmenopausal control and postmenopausal patients were 22.2, 23.1, 24.9 and 25.6 kg / m2, respectively. BMI between premenopausal controls and patients did not show significant differences, and also BMI between

postmenopausal participants did not show significant differences (P> 0.05) .[15]

The Kuscu et al study also showed that primarily TAH and TAH + BSO decrease sexual desire. One of the sexual problems after hysterectomy is inadequate and constant vaginal lubrication which decreases sexual satisfaction. Other complaints are narrowness and shortening of the vagina, and numbness around the labia, for 24 months post-hysterectomy. Radical hysterectomy shows a significant reduction in the maximum amplitude of the vaginal pulse during sexual arousal.[17]

Research by Kotsopoulos, showed that among postmenopausal women, plasma testosterone levels were significantly lower in women without ovaries compared to women who had both intact ovaries (geometric mean: 15.4 ng / dL vs 20.8 ng / dL; P <0,0001). The geometric mean testosterone level does not differ with the time of oophorectomy (15.4 ng / dL vs 15.6 ng / dL for premenopausal and postmenopausal oophorectomy, respectively, P = 0.80 for pairwise comparisons). There was a significant significant difference in the mean level of geometric SHBG between women who had oophorectomy and those who experienced natural menopause (P = 0.04). Specifically, SHBG levels were significantly lower in women with premenopausal oophorectomy (52.2 nmol / L) compared to women who had postmenopausal oophorectomy (62.0 nmol / L) or natural menopause (58.1 nmol / L) (global F-test P = 0.02). Comparing women with simple hysterectomy with those who experience natural menopause, this study observed significantly lower plasma testosterone levels (19.1 ng / dL vs 20.7 ng / dL; P = 0.03), which is likely due to levels lower rate in women undergoing surgery during premenopause (18.9 ng / dL) (global F-test P = 0.05) .[18]

Conclusion

Testosterone examination through saliva as an alternative method for testing testosterone, because this method is non-invasive and easier to do than conventional methods to measure testosterone. Further research is needed with a number of research samples to the exclusion of psychological factors.

Table 2. Differences in Testosterone Levels between Case and Control Groups

Table 1. Characteristics of Research Subjects

Characteristics	Case (n=27)	Control (n=27)	p
Case (n=27)			
Kontrol (n=27)			
p			
Age, n (%)			
21 – 30 years old	4 (14,8)	6 (22,2)	0,617
31 – 40 years old	13 (48,1)	14 (51,9)	
41 – 50 years old	10 (37)	7 (25,9)	
Education, n(%)			
SMP	5 (18,5)	0	
SMA	17 (63,0)	17 (63)	
Diploma	4 (14,8)	6 (22,2)	
S1	1 (3,7)	4 (14,8)	
Parity, n(%)			
Nullipara	9 (33,3)	1 (3.7)	
Primigravida	6 (22,2)	4 (14,8)	
Secundigravida	4 (14,8)	8 (29,5)	
Multigravida	8 (29,6)	14 (51,9)	
BMI, n (%)			
Underweight	1 (3,7)	1 (3,7)	0,660
Normoweight	9 (33,3)	13 (48,1)	
Overweight	10 (37)	9 (33,3)	
Obese	7 (25,9)	4 (14,8)	
Operation Time, n (%)			
< 6 months old	10 (37)	-	
6 bulan – 1 years old	3 (11,2)	-	
1 – 2 years old	10 (37)	-	
2 – 3 years old	4 (14,8)	-	
Hysterectomy, n (%)			
Yes	20 (74,1)	-	
No	7 (25,9)	-	
FSH, mean (SD), mIU/ml	59,29 (15,15)	-	

Testosterone Saliva Level, pg/ml	Case (n=27)	Control

		(n=27)	
Mean	22,41	44,22	0,001
Median	23,5	37,5	
SD	10,4	27,97	
Minimum	5,3	5,6	
Maximum	46,9	116	

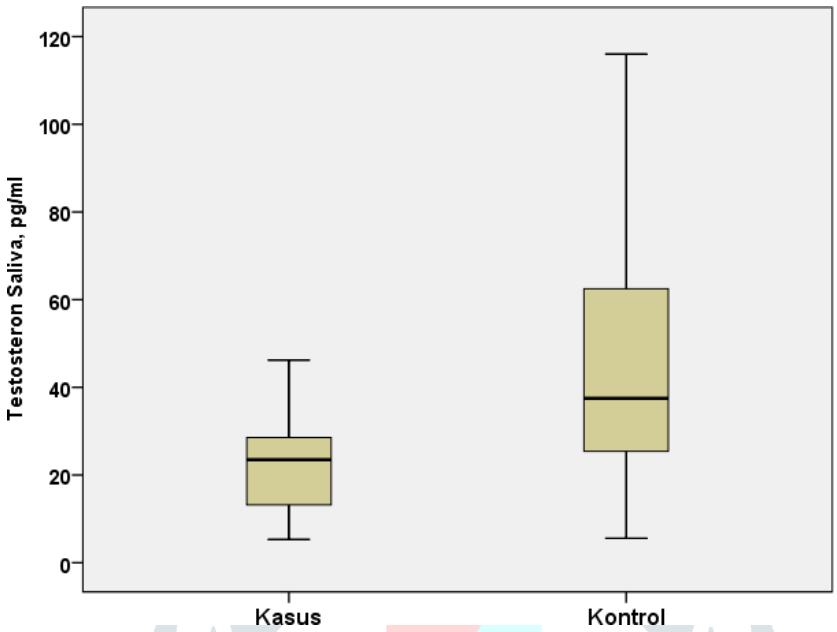

Figure 1 Boxplot Graph Differences in Testosterone Levels between Case and Control Groups

Table 3. Differences in Proportion of Sexual desire Disorders by Group Case and Control

	Case (n=27)	Control (n=27)	p	OR (95% IK)
Sexual desire Disorders, n (%)				
Yes	20 (74,1)	5 (18,5)	<0,001	12,571
No	7 (25,9)	22 (81,5)		(3,434 – 46,018)

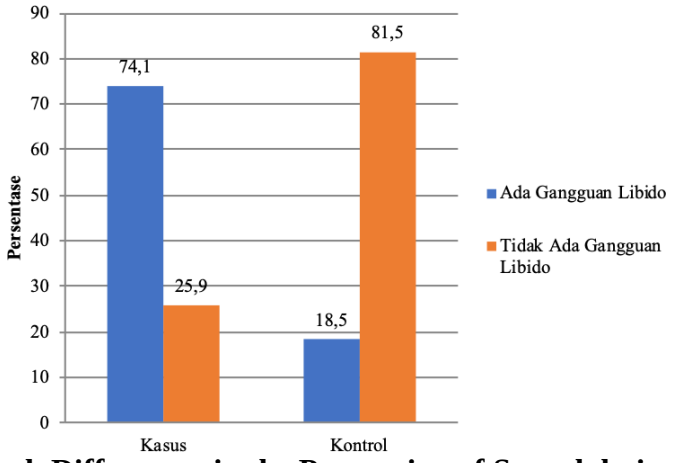

Figure 2. Histogram Graph Differences in the Proportion of Sexual desire Disorders between Case and Control Groups

Table 4. Relationship of Salivary Testosterone Levels to Sexual desire Disorders in the Group of Women with Surgical Menopause

Table 5. Relationship of Salivary Testosterone Levels to Sexual desire Disorders in Women without Surgical Menopause

Table 6 Differences in Salivary Testosterone Levels between Case and Control Groups in Subjects with Sexual desire Disorders

Sexual desire Disorders	Testosteron Saliva Level, mean (SD), min-max, pg/ml	p
Yes	18,97 (7,68), 5,3 – 32,6	0,002
No	32,24 (11,38), 11,1 – 46,2	

Sexual desire Disorders	Testosteron Saliva Level, mean (SD), min-max, pg/ml	p
Yes	12,21 (4,82), 5,6 – 18,5	0,001
No	51,49 (25,78), 21,8 – 116	

	Case (n=20)	Control (n=5)	p
Testosteron Saliva, pg/ml			
Mean	18,97	12,21	0,076
Median	20,20	11,1	
SD	7,68	4,82	
Minimum	5,3	5,6	
Maximum	32,6	18,5	

Table 7. Relationship between Duration of Operation and Testosterone Saliva Levels

Operation Time	Mean±SDTestosterone	p
< 6 months	51.04 ± 9.9	0.342
6 months-1 year	41.2 ± 6.7	
1-2 years	66.0 ± 11.2	
2-3 years	77.9 ± 8.0	

Table 8. Relationship Duration of Operation with Sexual desire Disorders

Operation Time	Sexual desire Disorders		p
	Yes	No	
< 6 months	6	2	0.002
6 months-1 year	3	0	
1-2 years	7	3	
2-3 years	4	0	

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