Scientific Research

Age-Specific Clinical Features of Erectile Dysfunction

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Abstract

Sexual health can be considered as a mirror of general health and, in turn, general health is a prerequisite for sexual heath. The aim of this study was to compare the different clinical features of erectile dysfunction (ED) in young and elderly males. From June 2011 to December 2011, 224 patients were included and divided into two groups. Elderly ED group consisted of 120 patients with ED and all were 61 - 90 years old, and young ED group consisted of 104 patients with ED and all were 21 - 45 years old. Questionnaires, physical examination, blood sample test, ultrasound monitor, time of achieving erection (TAE), intra-vaginal ejaculation latency time (IELT), ECG and penis-brachial blood pressure index (PBI) were investigated. There were significant differences between the two groups, regarding the top three complications, the body mass index (BMI), International Index of Erectile Function-5 (IIEF-5) scores, Self-rating Depression Scale (SDS) total scores, TAE, IELT and PBI. We concluded that clinical features of ED were age-specific, which will be helpful for treatment strategies and evaluation of the treatment efficacy.

Keywords

1. Introduction

Sexual health can be considered as a mirror of general health and, in turn, general health is a prerequisite for sexual heath. Though Masters and Johnson found no upper age limit for sexual function and many elderly men continue to be sexually active throughout their lives [1], a 9-year period study showed that within-person change

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in all aspects of sexual function was strongly related to age [2]. Erectile dysfunction (ED) is now well-studied and thought to be a symptom of underlying disease rather than a disease itself [3]. The role of the endothelium in regulating erectile physiology is well established, and the incidence of ED increases with age, usually associating with changes in arterial structure and function [4]-[7]. People are living longer and healthier lives nowadays, and elderly people proportion in this society is increasing. Elderly males will be different from young males in hormone level, general body and psychologic condition, sexual arousal, underlying diseases, and so on. It is important to distinguish the different clinical features of ED for young and elderly males for the treatment purpose. However, no sufficient studies regarding this aspect will be helpful for treatment strategies and evaluation of the treatment efficacy.

2. Materials and Methods

2.1. Ethical Approval

All the subjects were given a thorough explanation of the study and a written informed consent was obtained before participating in the study. Approval from the Reproductive Ethics Committee of The Third Affiliated Hospital, Sun Yat-Sen University, was obtained.

2.2. Participants

From June 2011 to December 2011, male patients visited Department of Infertility and Sexual Medicine, The Third Affiliated Hospital, Sun Yat-Sen University. Inclusion criteria: 1) main complaints of ED at least for 6 months; 2) age of 61 to 90 years old or 21 to 45 years old; 3) Evaluated by International Index of Erectile Function-5 (IIEF-5) to confirm an ED diagnosis. Exclusion criteria: Patients diagnosed as traumatic ED. Those who did not complete all of the examinations and questionnaires were also excluded.

2.3. Methods

1) After a detailed medical history was obtained, all of the patients filled in the IIEF-5 questionnaires and Self-rating Depression Scale (SDS) and a self-designed questionnaire for sociodemographic data independently.

2) All patients implemented physical examination (including calculation of body mass index, BMI), rectal examination, blood sample test for fasting blood glucose, ultrasound monitor for prostate and heart, and ECG. If there were abnormal results, the patient was arranged to see a specialist for diagnosis and treatment.

3) Penis-brachial blood pressure index (PBI) was calculated by the formula: penile arterial blood pressure/brachial blood pressure. Doppler ultrasound monitor instrument was used to measure the penile cavernous artery systolic pressure on both sides, and then measure the brachial artery systolic pressure.

4) All of the patients were provided with a stopwatch and instructed how to record the time of achieving erection (TAE) and intra-vaginal ejaculation latency time (IELT). Premature ejaculation (PE) was diagnosed basing on ISSM criteria [8].

2.4. Statistical Analysis

Statistical analysis was performed by using the computer statistical package SPSS/10.0 (Chicago, IL, USA). A p-value less than 0.05 was considered statistically significant. Continuous variables were expressed as $\bar{x} \pm s$, for normally distributed variables, t-test was used. As the IELT in individual patient usually follows a skewed distribution, we used the Wilcoxon rank to calculate geometric mean IELTs instead of mean IELTs. χ^2 test was used for classification variables

3. Results

An experienced technician was responsible for data collection. Totally 250 patients were recruited, and 26 were excluded due to incomplete data, 224 (89.6%) cases were included in the study. Based on their age, the studied population were divided as elderly male ED group (elderly ED group, 61 to 90 years old) and young male ED group (young ED group, 21 to 45 years old). **Table 1** showed the socio-demographic data and comparison of the clinical features between the two groups.

Table 1. Comparison of the two groups.

Characteristics		Elderly ED group	Young ED group	P value
Age (years)		65.9 ± 10.2	36 ± 6.6	P < 0.05
Education	Illiterate	5	1	P < 0.05
(cases)	Primary education	33	7	
	High school	65	34	
	University education	17	70	
BMI		30.9 ± 6.1	25.4 ± 2.3	P < 0.05
IIEF-5 scores		14.82 ± 4.17	11.83 ± 3.67	P < 0.05
Complications	Cardiovascular Disease	65	3	P < 0.05
(cases)	Prostatic hyperplasia	48	12	
	Diabetes	40	5	
	Chronic prostatitis	33	66	
	Premature Ejaculation	35	41	
	Depression	2	18	
SDS total scores		29.13 ± 5.63	39.59 ± 13.31	P < 0.05
TAE (minutes)		13.85 ± 5.75	3.61 ± 4.29	P < 0.05
IELT (minutes)		7.03 ± 5.35	3.81 ± 5.53	P < 0.05
PBI		0.78 ± 0.12	0.91 ± 0.06	

4. Discussion

ED patients had multiple complications, in an age-specific manner. ED is now well-studied and thought to be a symptom of underlying disease rather than a disease itself [3]. In this study, top three complications of elderly ED group were cardiovascular disease (CVD), benign prostatic hyperplasia (BPH) and diabetes, but for young ED group, the top three complications were chronic prostatitis, premature ejaculation (PE) and depression.

Studies showed that men over 65 years of age, testosterone deficiency seems to play an important role, the degree of ED was significantly higher in men with lowest testosterone levels [9]. Due to aging, elderly males are also affected by multiple organic diseases which could play a crucial role in the pathogenesis of dysfunction. As we know, the underlying processes in organic ED are arterial insufficiency, vascular occlusion disease, or combinations of both, and ED and CVD should be regarded as two different manifestations of the same systemic disorder [10]. Diabetes leads to penile cavernous neurovascular degeneration, resulting in reduced number of corpus cavernosum smooth muscle, and the formation of ED affect cavernous expansion. On the other hand reduced compliance of cavernous smooth muscle relaxation results in the outflow of blood vessels of the penis to form secondary latch dysfunction venous ED. Both CVD and diabetes are age-related diseases. These evidences suggested that many elderly ED may be a local manifestation of systemic disease.

Studies showed strong evidence that lower urinary tract symptoms (LUTS) and ED are correlated, although a direct causal relationship has not been established yet [11]. There was an association between ED and having been previously diagnosed with chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS). Urologists should be alert to the association between CP/CPPS and ED, and assess the ED patients suffering from CP/CPPS [12]. But difference still existed between the two groups, for elderly ED group, it was benign prostatic hyperplasia and chronic prostatitis for young ED group as one of the top three complications.

Study has shown that aging was correlated with less anxiety and more sexual symptoms [13], we also found this interesting phenomena in this study that less depression in elderly ED group, only 2 in 120, but it was 18 in 104 for young ED group. Not surprisingly, SDS scores were 29.13 ± 5.63 in elderly ED group and 39.59 ± 13.31 in young ED group (P < 0.05). It may be due to the fact that most elderly males treated ED as a natural manifestation. In other words, it may also demonstrate the truth that the proportion of psychogenic ED is lower in elderly ED group than in young ED group.

ED patients had different clinical manifestations, also in an age-specific manner. In this study, IIEF scores showed moderate ED in both groups, with scores in elderly ED group a little higher than in young ED group (*P*

< 0.05).

PBI measurement is a diagnostic modality useful in elucidating the cause of ED and the magnitude of its severity. PBI is the ratio of arterial pressure and the pressure of the dorsal penile brachial artery, and is used to evaluate penile blood supply. Normal PBI value should be above 0.8. In this study, PBI value of the elderly ED group was significantly lower than that of the young group (P < 0.05), supporting the fact that cardiovascular disease was a major cause for elderly ED.

The time of achieving erection (TAE) is the time required for penis to reach full erection for penetration, which is helpful for objective assessment of penile erectile function. In this study, the elderly ED group has significantly longer TAE than the young ED group (13.85 ± 5.75 minutes vs 3.61 ± 4.29 minutes). In addition to the organic disease of penis, poor general condition, decreased sexual arousal and decreased erectile central function result in delayed TAE in elderly ED group to attain a similar response as young ED group.

5. Conclusion

In all, ED patients had multiple complications and different clinical manifestations in an age-specific manner. Sexual attempts were an age- and testosterone-dependent phenomenon, and sexual function declining with body functions is a natural physiological and pathological process for elderly males [14]. Distinguishing the clinical features of ED related to age will be helpful for treatment strategies and evaluation of the treatment efficacy. However, the sample size of this study is not large enough, which may cause statistical bias.

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List of the Abbreviations

ED   Erectile Dysfunction
IIEF-5   International Index of Erectile Function-5
TAE   Time of Achieving Erection
PBI   Penis-Brachial Blood Pressure Index
BMI   Body Mass Index
SDS   Self-Rating Depression Scale
PE   Premature Ejaculation
CVD   Cardiovascular Disease
BPH   Benign Prostatic Hyperplasia