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THE EFFECT OF REAL-TIME ERECTILE RIGIDITY TESTED BY RIGISCAN ON DIAGNOSIS OF ERECTILE DYSFUNCTION

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Objectives: Penile color duplex ultrasonography (CDU) is believed as an effective measure for penile artery and venous function and a common objective test for etiological diagnosis of erectile dysfunction (ED). But it is an invasive test and some patients are unwilling to undergo this test. This study aimed to investigate if real-time rigidity test by Rigiscan could predict the CDU results.

Materials and Methods: 306 patients suspected ED were included in this study from 2014 to 2016. All patients were performed real-time rigidity test by Rigiscan after taking sildenafil 100mg one hour and receiving audiovisual sexual stimulation (AVS). All patients were performed CUD in another day after intracavernous injection of Alprostadil 10mg 15 minutes.

Results: The median age was 29 years old. The median course of ED was 1.5 (range from 0.5 to 4) years. The mean IIEF-5 score was 6.25. The median maximal rigidity tested by AVS-Rigiscan was 30% (0-40%) at the tip and 35% (0-50%) at the base. The median duration was 6 (1-18) minutes. The vascular function tested by CDU was normal in 137 patients and abnormal in 169 patients. There was no statistical correlation between CDU results and age (p=0.059), duration of disease (p=0.070) and IIEF-5 score (p=0.450). As for the relationship with AVS results, although not related to erectile duration (p=0.180), significant higher maximal rigidity was noted both at tip (p=0.035) and at base (p=0.019) in patients with normal CDU results. The ROC curves indicating the relationship between CDU results and the maximal rigidity were made with an AUC of 0.575 for tip and 0.571 for base. A maximal Youden’s index was found when maximal rigidity was over 37.5% at tip and 30.5% at base. A combined ROC curve was generated and the highest Youden’s index was achieved when a cut-off was set at rigidity over 37.5% at tip and 30.5% at base, with satisfied sensitivity and negative predictive value.

Conclusions: Penile erectile rigidity tested by AVS-Rigiscan could help predict the results of duplex ultrasound in the diagnosis of ED. A rigidity of 37.5% at tip and 30.5% at base could indicate a possibly normal result in duplex ultrasound and patients might be spared from invasive examinations.

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USEFULNESS OF RIGISCAN® EVALUATION OF NOCTURNAL PENILE TUMESCENCE

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Background: The RigiScan® is widely used for evaluating impairment of erectile function after traumatic events such as traffic accidents, workplace injuries, and surgical operations, and is often used in preparing diagnostic reports of erectile dysfunction, which can then be used as evidence in court cases. In Japan, the Ministry of Health, Labour and Welfare requires the use of RigiScan® monitoring for evaluating nocturnal penile tumescence (NPT) when assessing disability benefits for workplace accidents. We evaluated the accuracy of RigiScan® NPT testing for diagnosing erectile dysfunction.

Methods: A total of 46 men (age range, 17–65 years) presented at our clinic from January 2007 through October 2016 to obtain an official erectile dysfunction diagnosis certificate after physical trauma.

These diagnostic reports usually require two tests: (1) intracavernous injection of prostaglandin E1 (ICI PGE1) followed by RigiScan® evaluation of blood vessel response, and (2) a 3-day RigiScan® evaluation of erectile function, to assess NPT while the patient is sleeping.

Results: Of the 20 patients evaluated with NPT only, 16 had normal NPT results (indicating normal erectile function) and 4 had NPT abnormalities (indicating vascular disorders and/or neuropathy). The remaining 26 men were evaluated with NPT and ICI testing: NPT and ICI were both normal in 10 (indicating normal erectile function), NPT was normal but ICI was not in 5 (classified as normal erectile function), ICI was normal but NPT was not in 4 (indicating neuropathy), and both NPT and ICI were abnormal in 7 men (indicating a vascular disorder, with or without neuropathy).

Of the 26 men evaluated with both NPT and ICI testing, 5 had normal erectile function despite ICI abnormality, and another 4 had neuropathy despite normal ICI test findings. In the absence of NPT testing, diagnoses would have been based solely on ICI results, and 9 cases (35% of the 26 cases) would have been misdiagnosed. During ICI testing, response of smooth muscle in the corpus cavernosum to PGE1 is affected by psychological stress in the patient. Furthermore, ICI testing cannot be used to identify neuropathy.

Conclusion: When evaluating erectile function, RigiScan® assessment of NPT is superior to use of PGE1 ICI alone.

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ERECTILE DYSFUNCTION ASSOCIATES OWN "ARTERIAL PHENOTYPE" DEFINED BY GREATER ATHEROSCLEROTIC BURDEN, ARTERIAL STIFFNESS AND THICKNESS AND VASCULAR REACTIVITY LOWER THAN EXPECTED FROM EXPOSURE TO RISK FACTORS

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Introduction: The organic erectile dysfunction (OED) is proposed as a cardiovascular risk factor (CVRF). However, patients with OED are exposed to multiple CVRF, not knowing if they have different arterial changes than the expected for the exposure to traditional CVRF. Furthermore, knowledge of the net level of arterial disease in patients with OED is limited.

Objective: To determine if men with OED have structural differences and/or arterial functional relation than men without OED: (a) with similar exposure to CVRF and (b) not exposed to CVRF.

Methods: We included 22 men with OED (Group 1, 56 ± 8 years), 103 men without OED (Group 2, 58 ± 8 years) with similarly exposure to CVRF (atherogenic index and overall cardiovascular risk) and 23 men with no exposure to CVRF (Group 3, 57 ± 10 years). In all of them clinical and medical history was analyzed with noninvasive blood study to determine 1) prevalence of carotid atherosclerosis, 2) Carotid intima-media thickness 3) pressure and aortic stiffness and 4): maximum humeral flow-mediated vasodilatation (FMV). The comparison of groups 1 and 2 allowed to determine own arterial characteristics of OED, not associated with traditional cardiovascular risk factors (own arterial phenotype of OED); Compare 1 vs. 3 evidenced the net alteration associated with OED.

Results: Men with OED had higher prevalence of carotid atherosclerosis, atherosclerotic burden, aortic stiffness and carotid thickness and FMV than than men in group 2 and 3 (Table). There was no difference in aortic pressure between groups. The prevalence of femoral atherosclerosis was similar between groups 1 and 2.

Conclusion: OED associates an own "vascular phenotype" defined by increased prevalence of carotid atherosclerosis and atherosclerotic burden, increased aortic stiffness and carotid thickness and less FMV respect of men without OED with similar exposure to CVRF. The OED associated greater arterial deterioration than the one explicable for the traditional CVRF.

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THE IMPLICATION OF AORTIC CALCIFICATION ON SEVERE ERECTILE DYSFUNCTION IN PATIENTS WITH END STAGE RENAL DISEASE

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Objective: Erectile dysfunction (ED) has great impact of Quality of Life in patients with end stage renal disease (ESRD). It is estimated to occur at a rate of about 60%. Previous studies had identified potential risk factors of ED in patients with ESRD, including age, hemodialysis vintage and plasma testosterone concentration. Because ED is associated with vascular degradation, we hypothesized that preexisting aortic calcification may play a crucial role in severity of ED. The aim of the present study was to investigate the implication of aortic calcification on severe ED in patients with ESRD.

Material and Method: We treated 85 male patients with ESRD in our hospital. Of those, we included 57 patients with the age less than 75 years old. We evaluated sexual function using Sexual Health Inventory for Men (SHIM). Patients were divided into two groups between mild/moderate (total SHIM scores ≥8) and severe (total SHIM scores ≤7) ED groups. An aortic calcification was evaluated using aortic calcification index (ACI, %). The optimal cutoff value of the intensity of ACI for severe ED status was calculated with the ROC curve. Multivariate logistic regression analysis was performed to identify significant factors for influencing on severe ED.

Results: Median age was 61 years old in this cohort. Although plasma testosterone concentration was normal in most patients (54/57, 95%), ED was inherent in all patients. Thirty-six patients (63%) were diagnosed as a severe ED. The optimal cutoff value of the intensity of ACI for severe ED status was 80% (AUC = 0.811, P = 0.001), and rate of severe ED status was significantly higher in patient with ACI >80% (100%) than ACI <80% (44.7%) (P < 0.0001). In univariate analysis, age and ACI were selected as significant risk factors for severe ED. In multivariate analysis, ACI was selected as a significant independent risk factor for severe ED in patients with ESRD.