Forensic Identification for Erectile Dysfunction: Experience of a Single Center

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OBJECTIVE To analyze the characteristics of forensic identification cases and evaluate the importance of integrating penile erection length, angle, and rigidity in diagnosing erectile dysfunction (ED).

METHODS Retrospective analysis of the forensic identification cases between Jan 2009 and May 2013. Correlation between ED diagnosis and nocturnal penile tumescence (NPT) test result or the site of injury was analyzed.

RESULTS In total, 148 patients came for forensic identification of sexual function because of rape charges, divorce, medical accidents, or injury: 126 of 148 (85.1%) because of injury, of which 95 (75.4%) resulted from traffic accidents. There was a significant correlation between the site of injury and ED diagnosis; pelvic fracture with urethral or perineum injury was the most common. Our data showed that ED diagnosis was in general significantly associated with NPT results. However, we also identified three cases of diagnosed organic ED with normal NPT reactions. Our analyses showed that abnormal length and/or angle of the erectile penis were contributing factors to the diagnoses in these cases.

CONCLUSION In addition to NPT test, which measures the rigidity of the erectile penis, the length and angle of the erectile penis should also be considered in diagnosing ED, particularly in the case of forensic identification of sexual function. UROLOGY 86: 68–71, 2015. © 2015 Elsevier Inc.

Erectile dysfunction (ED) is highly prevalent, with 5%-20% of men estimated to suffer from moderate to severe ED.[1] ED is defined as the persistent inability to attain and maintain an erection sufficient to permit satisfactory sexual performance.[2] Most patients with ED can be diagnosed based on medical and sexual history, penile deformities, complex psychiatric or psychosexual disorders, and complex endocrine disorders. Additional tests such as the nocturnal penile tumescence (NPT) test can be performed to further determine the cause of erection problem. Penile rigidity is considered to be one of the most important indicators; hence, male erectile function (EF) has often been evaluated with the maximum changes of penile circumference and rigidity during NPT measurement. The NPT test has also been widely used in forensic identification of sexual function (SF) for legal purposes. In China's "guidelines for male sexual dysfunction forensic identification (SF/ZJD 0103002-2010)," it is required that NPT results are obtained to evaluate and diagnose ED for every patient. The European Association of Urology guidelines also recommend specific diagnostic tests including the NPT test using RigiScan for young patients with a history of pelvic or perineal trauma.[3] Although NPT is widely used and its general objectivity and reliability have been reported,[4] it is important to determine whether additional measurements such as erectile angle and/or length, which are not evaluated in NPT tests, should be considered for forensic identification purposes. Because forensic conclusion usually can be made only once, and it may affect the legal outcome, it is crucial for the forensic evidence to be objective and comprehensive. In this retrospective study, we demonstrated 3 special cases in which patients with normal NPT results had difficulty in sexual activities due to abnormal erection angle or length. These results will provide important references for future improvement in objective forensic identification.

METHODS

Patients

This was a single-center retrospective study. Data from 148 male patients commissioned to the Department of Infertility and Sexual Medicine, the Third Affiliated Hospital, Sun Yat-sen University, between January 2009 and May 2013, for forensic identification of EF were included.

Liuhong Cai and Manbo Jiang contributed equally to this work.

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Table 1. The legal purposes for forensic identification

Purpose	Cases	Age (y)
Rape charges	7	32.4 ± 15.0
Divorce	6	40.8 ± 8.1
Medical accidents	9	36.0 ± 6.2
Injury	126	34.2 ± 9.9
Total	148	

Identification and Diagnostic Workup

Patients were interviewed and underwent a complete physical examination, especially for testis volume, penis, and scrotum. The stretched flaccid length of penis was measured from the pubopenile skin junction to the urethra. The fat pad depth was measured by pushing the tape into the pubic bone, under maximal extension of the phallus. The stretched flaccid length was not measured during a nocturnal erection as part of the NPT. The erection angle of the penis from the body was measured when patient was in standing position.

Blood samples were drawn in the morning and after an overnight fast for levels of glucose, lipids, thyroid function, and sexual hormones. Penile Doppler ultrasonography (PDU) examination was performed before and 20 minutes after PGE1 (10 mg) intracavernous injection (ICI). Penile brachial pressure index (PBI) was applied to every patient. According to the guidelines, NPT was applied to every patient. Blood test and PDU examination were adopted based on the possible etiology. PDU was not administered in case 1 and case 2 described in this study because of concerns that ICI might cause priapism.

NPT Measurement

NPT tests were performed using RigiScan. The results of the RigiScan were considered normal if at least 1 episode of penile tip rigidity >60% with >10 minutes in duration was recorded during 2 consecutive nights of recording.[5]

Ethics

Signed informed consent forms were obtained from all patients before identification enrollment. This study was conducted in accordance with the Declaration of Helsinki and was approved by the Reproductive Ethics Committee of the Third Affiliated Hospital of Sun Yat-sen University.

Statistical Analysis

Statistical analysis was performed using Microsoft Excel and SPSS17.0 (SPSS Inc., Chicago, IL).

RESULTS

In total, 148 cases of forensic identification were included in this study; 85% of these patients were aged 30-40 years. Both the youngest one (19-year) and the oldest one (59 years) were in the rape-charged group.

The legal purposes for all the forensic identification cases are summarized in Table 1. Among these patients, 126 of 148 (85.1%) were admitted after physical injuries caused by traffic accidents, which account for majority of the cases (95 of 126), street fighting, or work-related accidents (Table 1).

Sites of injury and ED diagnosis are summarized in Table 2. Almost half of patients in the injury group and

Table 2. Sites of injury and ED diagnosis (cases)

Site of Injury	Organic ED	Psychological ED	Normal	Total
Pelvic fracture with urethral or perineal injury	52	1	7	60
Perineal injury	2	2	23	27
Vertebral injury	15	2	12	29
Brain injury	6	1	3	10
Total	75	6	45	126

ED, erectile dysfunction.

Pearson chi-square = 51.070, likelihood ratio = 56.062, linear-by-linear association = 9.639; $P < .01$.

Table 3. The NPT and ED diagnosis results

NPT	Psychological ED	Organic ED	Normal	Total
Normal NPT	4	3	60	67
Abnormal NPT	2	79	0	81

NPT, nocturnal penile tumescence; other abbreviations as in Table 2.

Pearson chi-square = 130.953, likelihood ratio = 170.470, linear-by-linear association = 86.213; $P < .01$.

60 of 148 total forensic identification cases suffered from pelvic fracture with urethral or perineal injury. Among these 60 cases with urethral or perineal injury, only 7 were diagnosed with normal EF, indicating a significant correlation between the site of injury and ED diagnosis (Table 2).

The NPT and ED diagnosis results of the 148 cases are summarized in Table 3. Overall, the ED diagnoses were significantly associated with NPT results. All 81 patients with abnormal NPT results were diagnosed with either psychological ED (2 of 81) or organic ED (79 of 81), indicating the effectiveness of NPT test in positively detecting EDs. However, 7 patients (of 67) with normal NPT results were also diagnosed with EDs, suggesting the ineffectiveness of NPT test in excluding EDs (Table 3).

There were 3 cases in which the patients with normal NPT reaction were diagnosed with organic ED (Fig. 1). In the first case (Fig. 1A), the patient came for forensic identification after a traffic accident that caused injuries to his penis and scrotum. Three injury-related operations had been performed before he was admitted for the forensic identification. Scarred vulva and penis, deformed scrotum, and shortened penis length of 4 cm (stretched flaccid length) were recorded. Major functional deficiency includes erection without penis length change, stiff penis, and the downward-pointing angle of the erected penis. As a consequence, it became extremely difficult for the patient to succeed in vaginal insertion although his test results of NPT and PBI were both normal.

The second case in these special cases also experienced a traffic accident (Fig. 1B). The injury resulted in incomplete fracture of penis, urethral rupture, and testicular shift. The deformed penis had a flaccid length of 5.1 cm and a stretch length of 6.4 cm. Subcutaneous fibrosis occurred at the base, and the penis had an