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REVIEW ARTICLE

Comprehensive Review and Recommendations for Evaluation of Sexual Potency of Male in Context of Current Indian legal system

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Abstract :

To discuss the current practice, standard procedures and recommendations for evaluation of male impotence/sexual dysfunction in context of the Indian legal system. Evaluation of a man for potency is done for various reasons like accusation of rape, non-consummation of marriage in a plea for annulment or compensation claims arising out of damage to sexual function secondary to accidents or any other means. Such evaluation is done after requisition by investigating officers in criminal cases or by the person himself in civil cases to verify or rule out allegations of impotence. It is a common practice for Indian police to request a potency examination in almost every case of sexual assault, despite the fact that the examination has very little impact on the outcome of the case in court. In the Indian scenario, even after a complete evaluation for impotence, medicolegal opinion is framed in a nebulous double negative format rather than a precise scientific manner. The Indian courts would welcome such examination in relevant case and desire that the experts frame objective and unequivocal opinions. Various articles, books, court judgments were reviewed to determine the current practice followed in determination of sexual potency in males. A systematic effort is made to make the examination completely justifiable with a more objective and scientific opinion.

Keywords : Impotence; Potency test; Indian legal system; Medicolegal examination.

Introduction :

The sexual potency of a male is the ability to achieve an adequate erection to be able to perform sexual intercourse and consummate. Sexual functioning is a complex bio-psycho-social process coordinated by the neurological, vascular and endocrine systems usually in response to sexual arousal. Any defect in any one of these links can lead to erectile dysfunction.[1-5] Request for evaluation of potency of a man is often made by an investigation officer or the court in cases of sexual assault or in pleas for dissolution of marriages.[6,7] K.S. Narayan Reddy[8] Before conducting a medicolegal evaluation for potency in the Indian context (as per section 53A CrPC),[9] one should be well-versed with the etiology and pathophysiology of sexual dysfunction.[10-14] Law prevalent in India prior to 2013 described rape as sexual intercourse with a woman without her consent, by force, fear, or fraud and peno-vaginal intercourse was an essential component. Thus, the accused often claimed impotence as a ground to prove his innocence in a court of law.[7,8] This started a trend among investigation agencies to refer all males charged with rape for medicolegal evaluation for potency.[15,16] The nationwide outrage over the brutal gang rape of a medical intern in India's capital city lead to insertion of new provisions in rape laws and culminated with the passing of the Criminal Law Amendment Act 2013. The new Act redefined sexual violence-related laws in India and prescribed more stringent punishment.[17] As per the new definition under Sec 375 of the Indian Penal Code (IPC), "Rape" includes non-penetrative sexual assault; penovaginal penetration was included only in clause (a) of Sec 375 IPC.[17] Even after the amendment of law, the practice of referral of the accused for evaluation of potency (popular as the "Potency test") continues till this day and causes unnecessary inconvenience to the police, doctors and the accused person.[18]

Current practice of the accused-potency test : The potency test is a medical examination that gives the authorities the leverage to take a call on the claim or allegation of impotence, depending on the findings of the examination. Ideally, forensic experts should conduct such examinations with help from the urologist, endocrinologist, radiologist and other allied specialists to reach a scientifically appropriate diagnosis. A key factor to remember is that in India, most examinations are conducted in government-run primary healthcare facilities, community health centres and district hospitals, by doctors possessing only the basic medical qualification of MBBS. The majority of such government doctors do not know what potency is or how to evaluate it. They often conduct a physical genital examination to rule out a gross anatomical anomaly, like the absence of a penis, and later frame the opinion in the routine double negative form stating that "There is nothing to suggest that the examined person is incapable of performing sexual intercourse" as mentioned in standard

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Indian textbooks of Forensic Medicine.[7,8,16,19] Whereas only few tertiary care medical institutions in metros and Tier 1 cities conduct a wide range of investigations involving specialized personnel. An Indian Fast Track Court in the capital city of Delhi expressed displeasure in one such case regarding the justification given by the doctor for his opinion on the potency of a person accused of sexual assault. The court raised concerns about the manner in which the examination for potency was conducted by the doctor and about the double negative format of the opinion given after examination.[6,20] The court also directed the Ministry of Health and Family Welfare, Government of India, to frame the guidelines for the potency test of the accused, if necessary.

Review and Discussion on examination for potency:

Indications and course of action for medicolegal evaluation of Sexual potency in males: As per the Indian law medicolegal examination for male potency may be required in the following situations:

A. Criminal Suits: a. The Criminal Law (Amendment) Act, 2013 under Section 375 IPC, changed the definition of rape from the classical peno-vaginal intercourse to include insertion of penis, body part, or object; into not only the vagina but also any other body orifice.[17] In certain cases, an accused person claims impotence as a ground to prove his innocence. In the Indian law, Sec 375(A) IPC includes penetrative sexual assault but there is no mention of the status of the penis of the offender - whether erect or flaccid.[17] Hence, examination for potency in such cases would actually be futile. However, if the victim alleges in her statement that the erect penis was inserted into any of the mentioned orifices of her body, the accused may derive benefit by such an examination.

b. Similar is the case when the accused person has been charged under section 3 (a) of POCSO Act (Protection of Children from Sexual Offences Act) i.e. sexual assault by penetration of penis in any orifices of the survivor and claims impotence as a defense.[21]

c. A person claiming loss of sexual function secondary to physical assault (included under the definition of 'Grievous hurt' vide Section 320 IPC) may also benefit from examination for impotence.[22]

B. Civil Suits: a. In the case of a plea for dissolution of marriage on the ground of impotence the husband may counter the allegation claiming to have no loss of potency.[7,8,16]

b. In civil cases of claims of compensation on the grounds of loss of sexual function, under section 320 IPC, an examination may help to support or refute the claim.[7,8,16,19]

As far as possible a board of doctors, including a clinical forensic expert, a urologist, a psychiatrist and an expert from the concerned field as per the condition/disease of the patient/accused person is alleged to be suffering, should conduct the examination to reach the appropriate conclusion. One should first understand the etiology and pathophysiology of potency and should be well-versed with diagnostic modalities of impotency.[11-13,16,23,24] It is needless to emphasize that the aspects of consent, privacy and confidentiality for and during examination should be strictly maintained.

The following stepwise approach for potency testing can act as a guide and help the examiner prepare a legally sound report.

Steps for evaluation of sexual dysfunction/potency in medicolegal cases:

1. Sexual, Medical and Psychosocial history.
2. Physical examination
3. Investigations (only those required)
4. Office Sildenafil Test (OST) / Intrapenile examination (to determine probable etiology, severity, and reversibility of impotence)
5. Ancillary Tests (doppler and other ancillary investigations)
6. Evaluation for psychiatric comorbidities
7. Framing the Opinion

History:

a) Sexual history – Sexual arousal to stimulus and libido should be inquired into to diagnose and specify the cause.[25,26] Sudden onset of erectile dysfunction requires psychogenic assessment whereas gradual and progressive type of onset requires assessment of organic causes of impotence.[27]

b) Medical history – of co-morbidities like diabetes, obesity, hypertension and dyslipidemia could suggest the etiology of impotence.[11,14,24,25,28,29]

c) Psychosocial history – Based on initial inquiry if a psychogenic cause is suspected, inquiry into existing stressors in life or marital conflicts could reveal a cause. Intake of drugs, alcohol abuse or other drugs of abuse suggests the possibility of reversible drug-induced impotence.[30-33]

d) In the absence of a known precipitating cause like trauma, surgery or medical illness, sudden onset of erectile dysfunction points towards a psychogenic cause or malingering (in criminal suits).[27] Psychogenic factors are involved either alone or in combination with organic causes.[34,35] Psychogenic factors as the solitary cause should essentially be a diagnosis of exclusion and as such, other organic causes of erectile dysfunction should be excluded before the impotence is ascribed to a psychogenic cause. If a psychogenic cause is suspected, the person should be referred to a psychiatrist to evaluate for reversibility of the condition.

Physical examination includes examination of general condition and genital examination. General examination should be done to assess for obesity, signs of chronic diseases and presence of secondary sexual characters. Local examination of the penis should be done for noting penile length, presence of phimosis, inflammation and curvature.[7,8,16,36] Though these findings may be relevant from an andrologist's perspective, the ability to attain an erection, capable of intercourse or potency depends on the size and curvature of penis. The presence of adequately sized testes with normal consistency in the scrotum on either side with secondary sexual characters would suggest adequate testosterone production.[37] Digital rectal examination is not required in the examination unless and until prostate cancer or benign

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hypertrophy of prostate is suspected to be a cause for impotence.[10]

Focused neurological examination should be performed by looking for dermatomal perianal sensation, bulbocavernosus reflex and lower extremity reflexes (kneejerk, ankle jerk). The presence of local neurological dysfunction suggests a greater likelihood of neurogenic component (to be correlated with past history).[10]

Blood Investigations:

Contrary to the general tendency to carry out the full array of laboratory tests, investigations should be chosen rationally depending upon the requirements of the individual case.[18] The basic investigations which are mandatory should include those for co-morbid conditions related to impotence, such as fasting blood sugar, postprandial blood sugar, HbA1c and serum lipid profile.[18]

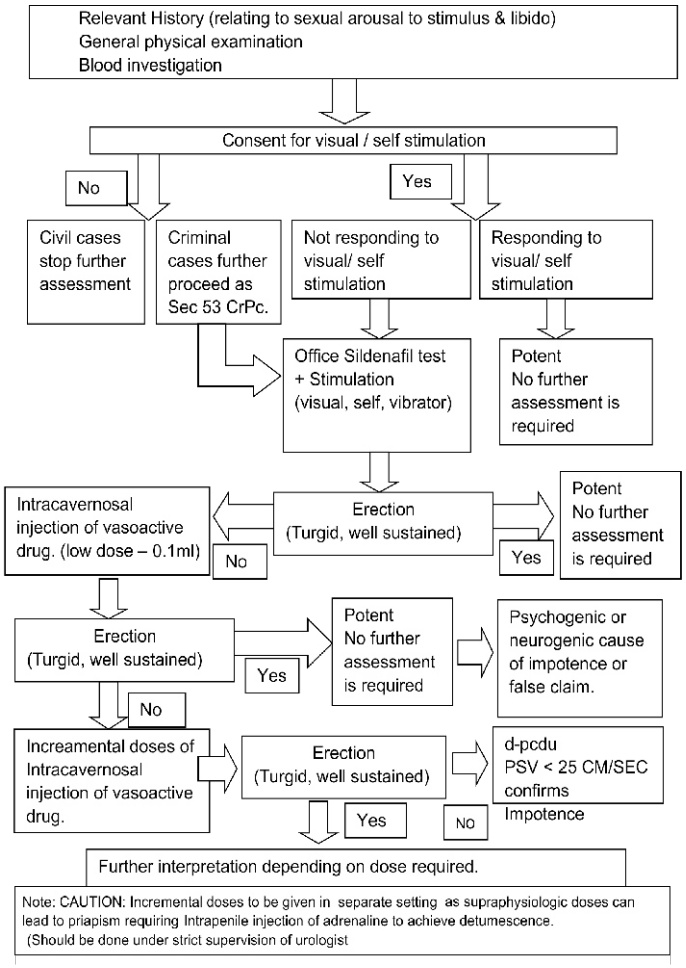
Optional Investigations:

i. Serum Testosterone and Sex Hormone Binding globulin (if hypogonadism is suspected)

ii. Thyroid hormones

iii. Serum Prolactin and Estradiol (obese patients - aromatization of testosterone to Estradiol)

Fig. 1: Medicolegal evaluation of a male for determination of sexual potency.



iv. Serum FSH (only in very specific circumstances to determine etiology of hypogonadism)

Erectile response is interplay of parasympathetic and sympathetic outflow, with excess parasympathetic outflow causing release of NO locally and relaxation of cavernous smooth muscle leading to occlusion of venous outflow, turgidity and tumescence. During detumescence sympathetic outflow increases leading to cavernous muscle contraction and opening of venous channels. The absence of parasympathetic stimulation or defective release of NO and hence decrease in cGMP (Cyclic Guanosine Monophosphate) leads to erectile dysfunction.[2,23] Similarly, excess sympathetic tone prevents relaxation of cavernous smooth muscle and hence causes erectile dysfunction. This is common in persons having stressors or anxiety with increased sympathetic outflow.[23,32,38,39] Sildenafil is a Phosphodiesterase 5 inhibitor with oral bioavailability of 41% and a half-life of 3- 5 hrs.[40] It acts as a facilitator of erection by increasing cGMP concentration with effects seen 1-2 hours after oral intake of the drug. The Office Sildenafil Test requires visual stimulation, self-stimulation or vibrator stimulation as it acts only as a facilitator. Papaverine is a phosphodiesterase inhibitor (PDE-2,3,4) that increases local cGMP causing an erection. PGE1 is a prostaglandin that causes arterial vasodilation and increased inflow. Intracavernosal Injection of Vasoactive Agent (ICIVAD) is based on this principle. Previously only Papaverine alone or PGE1 alone (western countries) was used for injection. However, a combination of papaverine with chlorpromazine or phentolamine (Bimix) or further addition of a 3rd agent PGE1 (Trimix) leads to a better erectile response with smaller doses of PGE1[41] and Papaverine. Phentolamine and Chlorpromazine have alpha-adrenergic blocking properties facilitating shifting of balance towards the parasympathetic outflow leading to an erection. Chlorpromazine is popular due to its ease of availability and low cost. Bimix containing chlorpromazine is as equally

Table 1: Preparation and injection of vasoactive agent for Intracavernosal injection.

BIMIX	TRIMIX
0.15 ml of 20mg/ml Chlorpromazine + 4 ml of 30mg/ml Papaverine (0.1ml to 1.0 ml BIMIX)	1 ml of BIMIX + 20 microgram of PGE1 (0.1 to 1.0 ml TRIMIX)

ICIVAD is done in the unilateral cavernosa using tuberculin syringe 0.1 to 1.0 ml. The ultrafine needle makes it painless and easy to inject.

Table 2: Reversible and irreversible causes of sexual dysfunction

Reversible	Irreversible
Mild to moderate Diabetes Mellitus (vasculogenic)	Very long standing diabetes, poor control, where irreversible endothelial dysfunction has taken place (Severe Arteriogenic)
Psychogenic ED (except age related and primary lack of sexual arousal)	Venogenic ED (primary or secondary to cavernosal fibrosis)
Drug Induced ED	Post Pelvic surgery Neurogenic dysfunction due to damage to pelvic nerves (radical prostatectomy , pelvic exenteration)
Situational ED	Spinal cord injury

efficacious as phentolamine in inducing erection.[42] Fixed concentration preparations lead to standardization of dosage and responses. Trimix containing PGE1 as 3rd component requires refrigeration and its injection can be painful.[43,44] The preparations and their usage is depicted in Table-1. The interpretation of ICIVAD should be done as outlined in table 2 to arrive at a comprehensive opinion with information regarding the reversibility and severity of the erectile dysfunction.

Ancillary Investigations include:

a) Penile Doppler (for confirmation of severe impotence)

b) Rigi scan (Nocturnal Penile Tumescence Rigidity)

c) Dynamic Infusion Cavernosometry Cavernosography (DICC):

Ancillary investigations are required only to confirm and corroborate the findings and are not mandatory. Their use should be at the discretion of the certifying board of physicians. Among the ancillary investigations, the role of penile doppler is to confirm severe arteriogenic impotence, as the last stop investigation and is not routinely required in all cases.[18]

Dynamic Penile Colour Doppler Ultrasound (d-PCDU) with 1 ml BIMIX injection should only be done after inadequate response to high dose ICIVAD (0.5 -1.0). Incorrect diagnosis of a venous leak is commonly seen in clinics due to a doppler done without adequate injection of a vasoactive agent. Peak systolic velocity (PSV) more than 35 cm/sec indicates arterial sufficiency and PSV less than 25 cm/sec suggests insufficiency.[45,16] Values falling between these two limits are to be considered as indeterminate and require correlation with the clinical picture. In association with a normal arterial response, an end diastolic velocity (EDV) >5 cm/second is accepted as the measurement at which a venous leak is present.[47]

Procedure of evaluation and interpretation of findings:

The procedure of evaluation and interpretation of sexual dysfunction/ impotence is depicted in Figure 1. Table 2 outlines the various reversible and irreversible causes of sexual dysfunction.

Hypogonadism need not be associated with impotence, and patients with low testosterone levels may have decreased libido but are generally capable of achieving a good erection.[48,49] A person claiming hypogonadism as the reason for his impotency should be subjected to the Office Sildenafil Test – a positive response will rule out impotence.[50,51]

The presence of well-developed secondary sexual characters in a person aged 16 years or more can be a good indicator of normal testosterone levels. S. testosterone levels fluctuate having ultradian and circadian variation and the values can be considered as low when more than 2 readings measured 3 weeks apart are less than 300 ng/ml.[52] In young males, 7-11 AM samples are ideal due to marked circadian variation, whereas random samples suffice in the elderly as they have greater ultradian variation and blunted circadian variation.[53] Reversible causes of hypogonadism like the use of corticosteroids or opiates, malnutrition, acute illness, alcoholism, and cirrhosis should be ruled out.[53,54] Normal Sex Hormone Binding Globulin (SHBG) levels can help rule out reversible causes. Hypogonadism carries greater significance in light of a failed OST. Such patients may respond to testosterone supplementation along with oral sildenafil.

A response to ICIVAD with adequate tumescence and sustained rigidity rules out a venous leak. Poor response with equivocal penile doppler findings may need Dynamic Infusion Cavernosometry Cavernosography (DICC) to establish venous etiology. Infusion rate >30ml/min (using an intravenous catheter) required to maintain erection pressure of >90 cm of H2O, 10 mins after Bimix/Trimix injection is suggestive of the venous leak.[55] For the purpose of potency reporting, one can avoid this invasive test (which requires pressure monitoring and infusion of fluid into the cavernosa via a venous catheter) as other tests can determine the severity and reversibility of impotence. This test should be thus reserved only for selected cases where the diagnosis of venous leak cannot be established on basis of clinical tests and doppler.[56]

Nocturnal penile erection was reported to occur in all men of different age groups during periods of rapid eye movement (REM) sleep.[57-59] It was assumed that during sleep psychological factors cannot interfere with nocturnal erection, whereas organic factors can interfere variously. Nitrous oxide (NO) was found to be released during REM sleep, the mechanisms of which are unknown.[58] Nocturnal Penile Tumescence and Rigidity (NPTR) testing via RIGISCAN has been used frequently in the past to access nocturnal erections to differentiate between organic and psychogenic causes of impotence. However, there are some disputes between NPTR and sex related erection as well as normative evaluation and false negative results that needs further evaluation.[60] The main disadvantages of this test are its prolonged period of monitoring in the sleep study room (up to 3 nights) and a large number of[61-63] tested individuals showing equivocal findings on the graphical plot of time versus percentage of rigidity and tumescence. This questions the accuracy, reliability, and usefulness of NPTR testing to measure critical aspects of erection physiology.[64] The unphysiological nature of the test with machines strapped on the thighs is also a hindrance as is its cost. The expensive, complicated, and time-consuming effort to record nocturnal erectile activity is unlikely to be useful anymore for the patient and for orienting the diagnosis and treatment choices.[65] Clinical examination, OST and IVICAD with penile doppler when required can preclude the need to use NPTR monitoring.

Opinion framed in current Indian scenario : In various Indian textbooks it is mentioned that in the absence of any organic cause of impotence, the opinion given is generally in the double negative format and is generally expressed as "There is nothing to suggest that the person examined is incapable of performing sexual intercourse." No guidelines are available to opine whether the examination points towards impotence if any reversible/irreversible cause of impotence is present.

Conclusion :

Effective framing of medicolegal opinion in Potency Test Report, The most important aspect of the entire exercise of examination of a man for medicolegal purposes for his potency is the

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'Opinion'. The investigation agencies as well as the courts would welcome an objective and unequivocal opinion rather than a vague one. What is expected of the doctor is an opinion as to whether the person examined is capable of achieving penile erection or not.

We recommend that after scientific evaluation of a person for sexual dysfunction, we could frame a more appropriate scientific opinion as follows:

a) If a person is found responsive then the opinion could be framed in an affirmative manner, such as "The findings of examination suggest that the person examined is physiologically capable of performing sexual intercourse."

b) If a person is found responsive but is detected to have a psychogenic cause for the impotence, then opinion could be framed in the following manner - "The findings of examination suggest that the person examined is physiologically capable of achieving penile erection sufficient to perform sexual intercourse. However, he is found to be suffering from _____ psychiatriac disorder that could have bearing on his potency."

c) If the person is found unresponsive, opinion can be framed on the following lines : "The findings of examination and investigations suggest that the person is not capable of achieving and / or maintaining penile erection. This impotence is found to be due to _____ (etiology) and is likely to be reversible/irreversible."

Recommendations:

1. The potency examination of accused should only be conducted if the person charged under sections (Sec 375(A) IPC) and Sec 3(a) of POCSO Act i.e. sexual assault by penetration of penis in any orifice of the survivor and claiming impotence as a defense.

2. To put forth a framework for scientifically evaluating impotence / sexual dysfunction among the persons sent for justified medicolegal evaluation of potency and giving an opinion that would be more scientific and objective than the usual practice of giving a guarded opinion in the double negative format. We hope that this framework would help facilitate scientific medicolegal evaluation of male impotence in current Indian legal system.

In India the health sector already struggles with paucity of funds and manpower. Such medicolegal evaluation in justified cases shall prevent unnecessary delays in the process and the also the resources can be used effectively.

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