

# Multifactorial evaluation of diabetic impotence

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*Patients referring to the Urology and/or Endocrinology Departments of Ankara Medical School with complaints of Diabetes Mellitus and related complications were evaluated during the last year period. A detailed history was obtained and all of the patients were questioned especially for the sexual function problems. Following this evaluation all patients were divided into two main groups as patients with sexual disorders and patients with normal sexual functions.*

*Factors such as BPH, Cerebrovascular disease and other important vascular-neurologic pathologies which may play a role in the etiology of diabetic impotence were excluded out of the study program and 26 patients with sexual dysfunction and 7 patients with normal sexual activities have undergone further evaluations.*

*Following routine blood, urine analysis, serum hormone levels (Testosterone, FSH, LH, Prolactin) were determined. Penile color doppler analysis, cavernosometry, cavernosography, Bulbocavernous reflex latency time (BCR) and Somatosensory evoked potentials evaluations (SEP) were performed. Additionally all patients were evaluated from psychiatric aspect by giving Hamilton depression scale and MMPI questionnaire.*

*The presence of vascular or neurologic pathology in 92.4% of our patients and the presence of both pathology in 46% of the patients together indicated the importance of multifactorial evaluation of diabetic impotence cases in order to plan a complete and efficient therapy program. [Turk J Med Res 1993; 11(4): 183-187]*

Key Words: Diabetes mellitus, Impotence, Vascular and neurologic pathology, Multifactorial etiology

It has long been proposed that impotence is a common problem among diabetic males with an estimated incidence varying from 35 to 75 (6,12,14).

Although impotence due to Diabetes Mellitus (DM) among male population was first reported in 1798, the exact origin of the pathology could be explained clearly in the last two decades (10).

Taking the conflicting literature data about the exact nature of diabetic impotence into account, some patients show curable potency problems due to transient metabolic disorders observed during the natural course of DM. On the other hand, majority of the patients have organic disorders especially vascular and neurogenic in nature.

Following the accurate and detailed explanation of the erection physiology, management of some definite organic disorders such as vascular or

neurogenic problems revealed considerably satisfactory results. Besides, the exact and precise determination of the causes of impotence observed in diabetic men, seems essential in order to design the most appropriate therapy plan.

In this prospective study, we aimed to demonstrate the exact role of some definite factors in the etiology of diabetic impotence by performing a detailed psychologic; vascular and neurogenic evaluation.

## MATERIALS AND METHODS

Twenty-six diabetic males with sexual disorder history and 7 diabetic males with normal sexual functions were evaluated further by performing a multiparametric sexual function protocol in the last year.

Following a detailed history, complete physical examination was performed and all routine blood, urine examinations were repeated. After these procedures, in order to delineate a possible psychogenic or organic disorder, some definite specific examinations were performed.

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To evaluate the psychogenic status of the patients, following a detailed standart face to face interview, Minnesota multiphasic personality inventory (MMPI) test results and Hamilton depression scale results were evaluated.

Serum FSH, LP, Prolactin and Testosterone levels were determined and in order to show a possible neurologic disorder Bulbocavernous reflex latency time and penile somatosensory evoked potentials (SEP) records were obtained. During penile SEP examination dorsal penile nerve was stimulated while the patient was in supine position. Anode electrode was placed on corona glandis and cathode electrode was placed on proximal penile shaft. The P<sub>1</sub> (The first positive peak) and N<sub>1</sub> (The first negative peak) values were recorded. The values over 46 ms were accepted as pathologic for P<sub>1</sub> and values over 58 ms for N<sub>1</sub>. Again values below than 0.6 uV we accepted as pathologic for P<sub>1</sub>-N<sub>1</sub> amplitude (16). During BCR examination the electrodes were placed again in the same position. Latency recordings over 40 ms and no latency formation were accepted as pathologic (3).

Vascular evaluation of the penile vasculature was performed by using color doppler sonographic evaluation. In addition cavernosometry and cavernosography were performed in patients with venous leakage suspicion. Color doppler sonography was performed with Toshiba SSA 270 unit and a 5 mHz linear duplex probe was used. Before beginning evaluation 60 mg papaverine was injected to intracavernosal space and following the dilation of the arteries recordings were gained in 3-5 minutes. The increase in cavernosal artery diameter and the diastolic, systolic blood flow rates were recorded. Flow rates in deep dorsal penile vein during diastolic and systolic phases were also recorded. The average duration of the procedure was nearly 25-30 minutes.

## RESULTS

The overall evaluation of the 26 patients with diabetic impotence and 7 patients with normal sexual functions

are shown in Table 1. The average age value of the patients in both groups was found to be nearly the same, however the time period after the onset of DM was longer in patients with diabetic impotence.

The results of vascular and neurologic evaluation in patients sexual dysfunction are summarized in Table 2. The majority of the patients had neurogenic and/or vascular pathology, on the other hand the high co-existence of both pathologies (46.1%) was markedly surprising. In 2 patients we were not able to show any vascular or neurogenic pathology.

The separate evaluation of vascular and neurogenic components in 18 insuline dependent and 8 non-dependent patients are shown in Tables 3 and 4. The incidence of these pathologies were found to be nearly the same as overall group results. Venous leakage incidence was more common in patients with non-insuline dependent diabetes mellitus.

Evaluation of neurogenic and vascular pathology in 7 patients with normal sexual functions (Table 5) revealed no demonstrable pathology in 3 patients and some degree of either vascular or neurogenic disorder in 4 patients. As shown in Table 6, all of these three patients were insuline non-dependent diabetic males.

## DISCUSSION

It has been long proposed that there are different factors which play important role in the etiology of diabetic impotence.

The majority of the first reports were mainly about the psychogenic and hormonal factors involved in this pathology, however currently autonomic neuropathy and vascular disorders are considered to be major etiological factors.

Concerning the hormonal factors related to diabetic impotence, Schofling et al were able to show decreased urinary excretion of pituitary gonadotrophins in 2/3 of their patients and increased urinary levels of 17-OH-ketosteroid. They showed the increase in low potential adrenal androgens and decrease in testicular

Table 1. The evaluation of 26 diabetic patients with erectile dysfunction and 7 patients with normals exual functions.

	Erectile dysfunction		Sexual function (normal)	
	n	%	n	%
No. of patients	26	100	7	100
Insuline dependent	18	69.2	4	57.1
Insuline non-dependent	8	30.8	3	42.9
No. of patients	26		7	
Age range (year)	29-68 (46.6)		34-59 (46.3)	
Duration of DM (year)	1.5-30 (8.1)		1-12(5)	
NEUROGENIC	18	69.2	1	14.2
VASCULAR	24	92.2	2	28.5
—Arterial	17	65.3	1	14.2
—Venous	7	26.9	1	14.2
NORMAL	2	7	4	57.1

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Table 2. The results of vascular and neurogenic evaluation in patients with erectile dysfunction

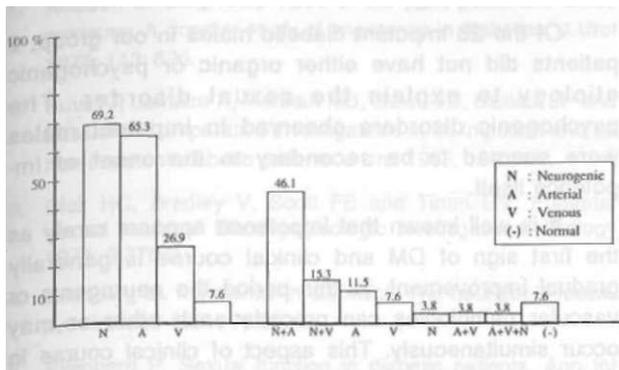
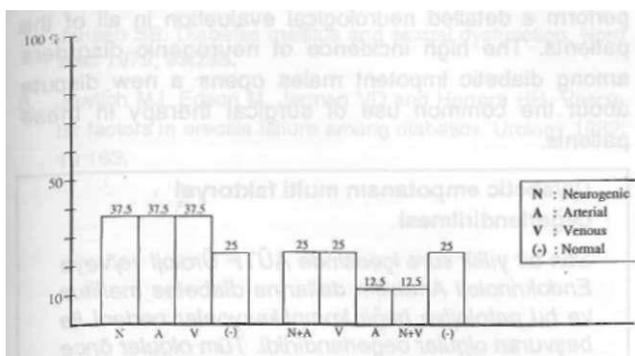


Table 4. Evaluation of insuline non dependent diabetic patients with sexual dysfunction



androgen levels as the main cause of this situation (15). They found the sperm count lowered in 1/3 of their patients and claimed that the impotence could be well managed with testosterone replacement. On the other hand, Kolodny et al, found no difference between diabetic and non-diabetic patients (9) and Faerman et al, could not show any difference in the serum hormonal levels, testicular histology and cell morphology of these patients (6).

In our present study, we also observed no difference in serum FSH, LH, prolactine and testosterone levels of impotent and normal diabetic patients.

Some authors reported the successful results of sex therapy results (75%) among diabetic males (13). In another study, the authors were able to demonstrate psychogenic disorder in 60% of the patients by performing Minnesota Multiphasic Personality Inventory (MMPI) and standart anemnese, and all these psychogenic disorders were depression and performance anxiety seconder to the onset of diabetic impotence (2). In our group all of the patients in both groups seemed to be aware of their problems and in need of help with a depressive individuality. They all expressed their sense about the problem very naturally. All of the patients were aware of a real physical

Table 3. Evaluation of insuline dependent diabetic patients with sexual dysfunction

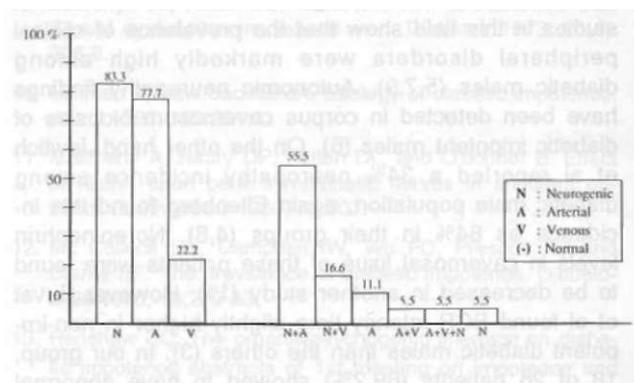


Table 5. The results of vascular and neurogenic examination in 7 patients with normal sexual functions

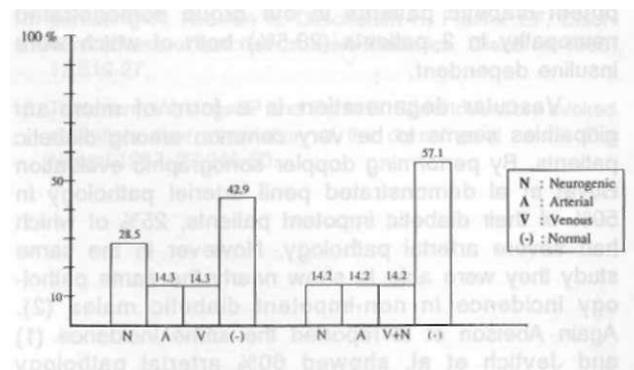


Table 6. The results of etiological evaluation of 7 patients with normal sexual functions in relation to insuline dependence



disorder and they expressed their anxieties about body functions. Patients with sexual disorder seemed to be more anxious and have lowered self-reliance. In summary, we may say that psychogenic components did not seem as primary etiological factors in our patients, on contrary they seemed to be secondary to the onset of diabetic impotence. Of the 26 patients evaluated, two patients had no organic disorder. Both of them were evaluated further and we were not able to

demonstrate any contributive factor, in the etiology of sexual disorder.

Taking the neurological factors in to account studies in this field show that the prevalence of clinical peripheral disorders were markedly high among diabetic males (5,7,9). Autonomic neuropathy findings have been detected in corpus cavernosum biopsies of diabetic impotent males (6). On the other hand Jewtich et al reported a 34% neuropathy incidence among diabetic male population, again Ellenberg found this incidence as 84% in their groups (4,8). Norepinephrin levels in cavernosal tissue of these patients were found to be decreased in another study (11). However Buvat et al found BCR latency time slightly higher in non-impotent diabetic males than the others (3). In our group, 18 of 26 patients (69.2%) showed to have abnormal BCR latency time and penile SEP records. Evaluation of insuline dependent 18 patients seperately, revealed this incidence to be 83.3%. Evaluation of 7 non-impotent diabetic patients in our group demonstrated neuropathy in 2 patients (28.5%) both of which were insuline dependent.

Vascular degeneration in a form of micro-angiopathies seems to be very common among diabetic patients. By performing doppler sonographic evaluation Buvat et al demonstrated penil arteriel pathology in 50% of their diabetic impotent patients, 25% of which had severe arterial pathology. However in the same study they were able to show nearly the same pathology incidence in non-impotent diabetic males (2). Again Abelson et al reported the same incidence (1) and Jevtich et al, showed 60% arterial pathology among diabetic impotent males in which a higher incidence was reported among insulin dependent diabetic males (8). In our study group the evaluation of penil vascular integrity was performed by color doppler sonography and cavernosometry and the incidence of vascular pathology in our patients was 92 % (24 of 26 patients). In 17 patients (65.3 %) moderate or severe vascular degeneration was demonstrated and 7 patients had venous leakage in accordance with color doppler sonography and caverrosometry results (26.9%). Like neurogenic disorders the arterial pathology incidence was also higher in insuline dependent patients. On the other hand venous leakage incidence was a little higher in non-insuline dependent patients (22.2% - 37.5%). In non-impotent group, 2 of 4 patients who were insuline dependent had vascular pathology.

In summary we found 92.4% neurogenic or vascular disorders in our 26 diabetic impotent patients. Although the seperate incidence of neurogenic or vascular disorders seemed to be nearly the same, the co-existent presentation of both pathologies was suprisingly higher (46%). In one patient we observed arterial pathology, venous leakage and neurogenic disorder together. The incidence of vascular and neurogenic etiology was found to be higher among insuline de-

pendent patients than the other ones. Among patients with no sexual disorder history, 3 of them had either vascular or neurogenic disorder (45%).

Of the 26 impotent diabetic males in our group, 2 patients did not have either organic or psychogenic etiology to explain the sexual disorder. The psychogenic disorders observed in impotent males were seemed to be secondary to the onset of impotence itself.

It is well known that impotence appears rarely as the first sign of DM and clinical course is generally gradual improvement. In this period the neurogenic or vascular pathologies can precede each other or may occur simultaneously. This aspect of clinical course in diabetic patients is very important in planning the appropriate treatment strategy. Our results indicate that, in diabetic patients with demonstrated vascular pathology, before performing a surgical therapy, one must perform a detailed neurological evaluation in all of the patients. The high incidence of neurogenic disorders among diabetic impotent males opens a new dispute about the common use of surgical therapy in these patients.

Diyabetic empotansın multi faktoryal değerlendirilmesi

*Son bir yıllık süre içerisinde AÜTF Üroloji ve/veya Endokrinoloji Anabilim dallarına diabetes mellitus ve bu patolojiye bağlı komplikasyonlar nedeni ile başvuran olgular değerlendirildi. Tüm olgular önce detaylı bir anemnez alınarak, özellikle seksüel fonksiyon bozukluğu olanlar açısından dikkatle sorulandı. Tüm olgular seksüel fonksiyon bozukluğu olanlar ve olmayanlar şeklinde iki grup halinde değerlendirildi.*

*Empotans etiolojisinde rol oynayabilecek BPH, serebroskleroz ve diğer belirgin nörolojik ve vasküler patolojileri olan olgular çalışma grubu dışında tutularak, erektil disfonksiyonu olan 26 olgu ile seksüel fonksiyonları normal olan 7 olgu ileri incelemelere tabi tutuldu. Tüm hastaların rutin kan ve idrar incelemelerine ek olarak serum hormon düzeyleri belirlendi (Testosteron, FSH, LH, Prolaktin). Bu incelemeleri takiben, penil renkli dopler, kavernoziometri, kavernoziyografi, bulbokavemöz refleks süresi tayini (BCR) ve somatosensoryel uyarılmış potansiyeller (SEP) uygulandı. Tüm hastalara ayrıca Hamilton depresyon ölçeği ve Minnesota çok yönlü kişilik envanteri (MMPI) verilerek psikiyatrik değerlendirmeleri yapıldı.*

*Çalışmamızda seksüel disfonksiyon saptanan olguların % 92.4 kadarında nörolojik yada vasküler patolojinin saptanılması ve % 46 olgu da her iki patolojinin birlikte bulunması, diabete bağlı empotans olgularında doğru tedavinin planlanmasında multifaktöriyel incelemenin gerekliliğini açıkça ortaya koymaktadır.*

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