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# Sympathetic skin response recorded from the genital region in normal and diabetic women

## Réponses sympathiques recueillies sur la région génitale : comparaison entre femmes saines et diabétiques

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### KEYWORDS

Sympathetic skin response;  
Genital region;  
Diabetes;  
Female

### Abstract

**Aim of the study.** - An electrophysiological technique assessing the sympathetic skin activity related to sudomotor function from the genital skin has been described previously in normal adult man. The problems of the genitourinary tracts and the sexual disorders are difficult to analyse in women. In this paper, a method for recording the genital sympathetic skin responses (g-SSR) has been described in normal women and the objective changes were demonstrated in female patients with diabetes mellitus.

**Material and method.** - Our study comprised 20 healthy adult women (mean age 42.5 years) and 20 diabetic women (mean age 52.8 years). We examined both left hand sympathetic skin responses (SSR) and genital region SSR by electrophysiological methods. Superficial Ag-AgCl electrodes were placed on perineum in front of the anal sphincter and 1-1.5 cm lateral to right labia majora for recording after the stimulation of the right median nerve. All g-SSRs from both recording sites were analysed, latency and amplitudes were compared in normal subjects and patients.

**Results.** - It has been clearly demonstrated that the g-SSR is easily obtained from all normal female subjects in labia majora-perineum montage. In seven of 20 diabetic patients g-SSR could not be elicited. Mean amplitude was significantly reduced in diabetic group according to normal subjects ( $P < 0.05$ ).

**Conclusion.** - It was concluded that the method described in this study is easily applied and objectively evaluated for the female patients with genitourinary and sexual problems.

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**MOTS CLÉS**

Réaction sympathique cutanée ;  
Région génitale ;  
Diabète ;  
Femme

**Résumé**

**Objectif de la recherche.** - Nous avons par le passé défini une technique électrophysiologique pouvant déterminer l'activité sympathique de la peau en rapport avec la fonction sudomotrice de la peau génitale chez l'homme adulte, mais les dysfonctionnements sexuels et genito-urinaires sont particulièrement difficiles à analyser chez la femme. Dans ce travail nous décrivons une méthode d'enregistrement des réactions sympathiques génitales chez les femmes, et comparons les résultats dans un groupe témoin en bonne santé avec ceux obtenus chez des femmes diabétiques.

**Matériel et méthode.** - La recherche a été menée auprès de 20 femmes adultes en bonne santé (âge moyen : 42,5 ans) et 20 femmes diabétiques (âge moyen : 52,8 ans). Les réponses électrophysiologiques sympathiques ont été obtenues à la fois sur la main gauche et sur l'appareil génital. Des électrodes de surface (Ag-AgCl) ont ainsi été placées sur le périnée, devant le sphincter anal et à distance de 1-1,5 cm sur le côté de la grande lèvre droite pour enregistrement après la stimulation du nerf médian droit. Nous avons comparé latences et amplitudes des réponses dans les deux groupes.

**Résultats.** - Les réponses sympathiques de la peau de la grande lèvre du périnée ont été obtenues aisément chez toutes les femmes du groupe témoin, alors que seulement 7 des 20 femmes diabétiques montraient des réponses reproductibles. De plus, l'amplitude moyenne des réponses était sensiblement réduite dans le groupe diabétique par rapport au groupe témoin.

**Conclusion.** - La méthode d'enregistrement décrite dans ce travail est facilement applicable, et permet son application clinique chez des femmes présentant des dysfonctions genito-urinaires et/ou sexuelles.

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**Introduction**

An electrophysiological technique which assesses the sympathetic skin activity related to sudomotor function from the genital skin has been described previously in normal adult men [10,11]. This method has also been applied to impotent diabetic males [11] and patients with premature ejaculation [12]. These and subsequent reports [1,2,6,23,33] have shown that the absence of sympathetic skin responses (SSR) from the genital region is one of the earliest findings in diabetic impotence while the genital sympathetic skin responses (g-SSR) are completely normal in a potent man.

Any pathological process altering the function of the lumbosacral sympathetic system can effect both sudomotor and sexual activity in man [2,8,10,11,13,23,30]. Therefore, g-SSR appears as a potentially useful method to assess the sympathetic nervous system component innervating the lower genitourinary tract and sacral dermatomes. Therefore genitourinary tracts and sexual disorders in women, which are particularly difficult to analyse, can be investigated objectively via the g-SSR.

While the role of sympathetic nervous activity has been assessed in respect to female sexual arousal [20,21,32], the genitourinary dysfunction and the sexual problems of the diabetic female have not been investigated using the g-SSR. In this paper, a method for recording the g-SSR has been

described in normal women and objective changes are demonstrated in female patients with diabetes mellitus (DM).

**Materials and methods**

SSR recordings from the skin of the hand and genital region were obtained from 20 normal healthy female volunteers with a mean age of 45.5 (range: 30-61 years) and from 20 diabetic women (mean age 52.8 years; range: 38-68 years).

Patients without diabetes complications such as nephropathy or retinopathy were chosen randomly from the outpatient clinic of the Endocrinology Department. Patients were chosen before the diagnosis of diabetic neuropathy or sexual complaint/dysfunction was established. According to the DM classification all patients except one had type-II (non-insulin dependent) DM. Their disease period was between 3 and 16 years (mean 9 years). At the time of the examination, diabetic women were all under conventional treatment for DM (12 of 19 type-II DM were on oral antidiabetics, seven of 19 type-II DM were on insulin and the single type-I DM was on insulin treatment too).

Motor and sensory nerve conduction studies (median, ulnar, peroneal, tibial and sural nerves) were

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