Management of Sexuality Problem in Quadriplegia: A Brief Summary

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Abstract-
Quadriplegia is a serious group of spinal disability. Cases with quadriplegia usually present unsatisfactory sexual life. In male, the main problem is the ability to reach orgasm deficient. In female, pregnancy problem should be noted. Management of sexuality problem in quadriplegia is of interest. In this article, the author will briefly review on this topic.

Key words: sexuality, quadriplegia.

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INTRODUCTION

Quadriplegia is a serious group of spinal disability. The need for research addressing sexuality problems unique to the quadriplegic cases is well documented. It should be noted that cases with paraplegia reported a more satisfactory sex life than those with quadriplegia[1,2]. Charlifue said that although satisfied with care received from physicians, many patients were not content with the information provided during rehabilitation, and felt a need for more literature, counseling, and peer support[1]. Dahlberg et al noted for the importance of concern on sexual activity and satisfaction in quadriplegic patients[2].

In male, the main problem is the ability to reach orgasm deficient. For this scenario, Dahlberg et al reported that the completeness of the spinal lesion had no effect and the more severe locomotory disability might adversely affect the sex life of persons with quadriplegia compared with those with paraplegia[2]. In female, post injury amenorrhea is of concern and decreased of pregnancy ability can be seen[1]. Charlifue said that the cases with incomplete paraplegia had significantly more pregnancies than those with complete quadriplegia showing the more severity of the problem in quadriplegia[2]. Management of sexuality problem in quadriplegia is of interest. In this article, the author will briefly review on this topic.

NEUROPHYSIOLOGICAL CHANGE OF SEXUAL FUNCTION AFTER SPINAL CORD INJURY

After spinal cord injury, sexual functioning of the

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affected cases can be deteriorated[3-5]. Sipski noted that the ability to achieve erection, lubrication and ejaculation could be described based upon the degree and type of neurologic injury affecting the sacral spinal segments, however, the ability of SCI individuals to achieve orgasm had not been found to be based upon the type of degree of neurologic injury[3]. Hence, the problems on disturbance of normal sexual functioning are the important issues for management in sexual neurophysiology for cases with quadriplegia[3-5].

MANAGEMENT OF SEXUALITY PROBLEM IN MALE WITH QUADRIPLEGIA

As already mentioned, the loss of the erectile function is the main problem affected male with quadriplegia. Ertekin et al noted that sacrolumbar intersegmental reflex circuit in men, which related to ejaculation, still existed but defected[6]. Basically, neurons in the medullary reticular formation (MRF) involving in the processing of bilaterally convergent sensory inputs from the penis and male urogenital tract have specific ascending pathway in spinal cord injury[7-8]. Hubscher and Johnson reported that low and high threshold input from the penis and male urogenital tract ascended bilaterally within the dorsal quadrant at T8 as opposed to high threshold input from the hindpaws, which ascends unilaterally in the ventrolateral quadrant in chronic condition while the low-threshold information ascended from the penis and male urogenital tract ascends in the dorsal columns, as opposed to the high-threshold nociceptive inputs that ascend bilaterally in the dorsolateral quadrant in acute condition[7]. For descending pathway, Hubscher and Johnson reported that "there was evidence for descending projections conveying information between MRF and the lower thoracic/lumbosacral male urogenital circuitry within the dorsolateral quadrant and the dorsal-most aspect of ventrolateral quadrant at the midthoracic level of spinal cord[8]." The irregularity within the pathway brought to sexual function problem and it is noted that less than 20 % of affected men can ejaculate [9].

Brown noted that anejaculation in quadriplegia needs proper management[10]. Masham noted that this is an important psychological problem of the affected cases and it is the focus on marriage for the patient[11]. Management of the erectile dysfunction in male quadriplegic patient is of interest. There are many proposed methods. Firstly, drug therapy is reported for its effectiveness. Prostaglandin E1 is an important drug for erectile dysfunction in spinal cord injury[12]. This drug can be self applied, injection, by the patients. Intracavenous injection of prostaglandin E1 induced erection was caused by vasodilation, not spinal cord ischemia[12]. Conejero Sugrañes et al reported thatprostaglandin E 1 administration was very effective in the treatment of erectile dysfunction in patients with spinal cord injury and the dose required was usually lower than in the non neurological patients[13]. Lebib Ben Achour et al said that "The average doses required to obtain a functional erection was 12.3 + 4.8 microgram with alprostadil and 14 + 5.4 mg with moxisylyte 14". However, it should be noted that most cases for management of sexual dysfunction in real clinical practice are chronic cases with quadriplegia, who might not be able to apply self injection of progtaglandin E1. In addition to prostaglandin E1, there are also other drugs. Soler et al reported that midodrine hydrochloride could improve ejaculation in spinal cord injured men[15]. Staerman et al reported their experience in 10 spinal injury patients that midodrine hydrochloride could give good results in terms of ejaculation in spinal injury patients[16]. Sánchez Ramos et al studied the efficacy and safety factors of therapeutic success with sildenafil for erectile dysfunction in patients with different spinal cord injuries[17]. Sánchez Ramos et al said that the sildenafil should be considered as a therapeutic tool to this problem[17].

In additional to drug treatment, there are also other alternatives. Of those means, vibratory stimulation for treatment of anejaculation in quadriplegic men is widely used[18-19]. This is an effective and safe method[18-19]. Hirsch et al reported their observation on electroejaculatory stimulation of a quadriplegic man resulting in pregnancy[20]. Leeton et al also reported another successful pregnancy using known donor oocytes fertilized in vitro

by spermatozoa received by electro-ejaculation from a quadriplegic husband[21]. This is a big succeed[18-21]. The other choices include selective intrathecal phenol block [22] and vacuum penile tumescence[23]. Selective intrathecal phenol block is aiming at improvement of activities of daily living in patients with spastic quadriplegia[22] while vacuum penile tumescence is a constriction therapy widely used for neurological impotence[23].

MANAGEMENT OF SEXUALITY PROBLEM IN FEMALE WITH QUADRIPLEGIA

Similar to the problem in male, the similar deterioration of normal sexual pathway can be seen in females. Management of sexuality problem in female with quadriplegia also focuses on pregnancy ability. However, there is no confirmation that there is a disturbance on hormonal function in cases with sexual dysfunction[24]. In acute injury, amenorrhea can be seen but can be self recovered[25]. It is confirmed that the females with quadriplegia can have pregnancy[25]. Pryor et al said that delayed timing of intrauterine insemination led to a significantly improved pregnancy rate in female partners of quadriplegic men[26]. Electrical stimulation is a treatment of choice similar to the male cases. Halstead et al reported the success in using rectal probe electrostimulation to correct the sexuality problem in female with quadriplegia[27]. Recently, Yamamoto et al reported a succeed in pregnancy owing to the assistance of electroejaculation in conjunction with intracytoplasmic sperm injection[28]. Considering the other alternative, Moreno et al reported on improved quality of life and sexuality with continent urinary diversion in quadriplegic women with umbilical stoma[29]. Moreno et al concluded that continent urinary diversion in women results in improved self-image, quality of life, and enables greater sexual satisfaction[29]. Focusing on the problem of amenorrhea, as earlier noted, it can be self recovery. There is no problem despite in case of pediatric female with quadriplegia before menarche[30]. In case of delivery, two problems to be considered included autonomous dysreflexia and caesarean section [31].

REFERENCES

1. Charlifue SW, Gerhart KA, Menter RR, Whiteneck GG, Manley MS. Sexual issues of women with spinal cord injuries. Paraplegia 1992;30:192-199.
2. Dahlberg A, Alaranta HT, Kautiainen H, Kotila M. Sexual activity and satisfaction in men with traumatic spinal cord lesion. J Rehabil Med 2007;39:152-155.
3. Sipski ML. Sexual functioning in the spinal cord injured. Int J Impot Res 1998;102:S128-130.
4. Geiger RC. Neurophysiology of sexual response in spinal cord injury. ARN J 1980;5:16-19.
5. Crigler L. Sexual concerns of the spinal cord-injured. Nurs Clin North Am 1974;9:703-716.
6. Ertekin C, Uysal H, Bademkiran F, Altay B. Sacrolumbar intersegmental reflex circuit in men and its relation to the ejaculatory process. Clin Neurophysiol 2007;118:2368-2374.
7. Hubscher CH, Johnson RD. Effects of acute and chronic midthoracic spinal cord injury on neural circuits for male sexual function. I. Ascending pathways. J Neurophysiol 1999;82:1381-1389.
8. Hubscher CH, Johnson RD. Effects of acute and chronic midthoracic spinal cord injury on neural circuits for male sexual function. II. Descending pathways. J Neurophysiol 2000;83:2508-2518.
9. Ver Voort SM. Ejaculatory stimulation in spinal-cord injured men. Urology 1987;29:282-289.
10. Brown TR. Anejaculation in quadriplegia. Arch Phys Med Rehabil 1995;76:889.
11. Masham. The psychological and practical aspects of sex and marriage for the paraplegic. Proc R Soc Med 1973;66: 133-136.
12. Ko SH, Chun W, Kim HC. Delayed spinal cord injury following electrical burns: a 7-year experience. Burns 2004; 30:691-695.
13. Conejero Sugrañes J, Muñoz Villellas A, Sarrias Lorenz F, Ram?rez Garceran L. Prostaglandin treatment in neurological patients with erectile dysfunction. Arch Esp Urol 2002; 55:63-68.
14. Lebib Ben Achour S, Laffont I, Boyer F, Boiteau F, Dizien O. Intracavernous injections in the treatment of erectile dysfunction in spinal cord injured patients: experience with

36 patients. Ann Readapt Med Phys. 2001;44:35-40.
15. Soler JM, Previnaire JG, Plante P, Denys P, Chartier-Kastler E. Midodrine improves ejaculation in spinal cord injured men. J Urol 2007;178:2082-2086.
16. Staerman F, Bryckaert PE, Youinou Y, Colin J, Brandt B, Lardennois B. Pharmacologic stimulation of ejaculation with midodrine hydrochloride (Gutron) for medically assisted reproduction in spinal injury. Prog Urol 2001; 11:1264-1268.
17. Sánchez Ramos A, Vidal J, Jáuregui ML, Barrera M, Recio C, Giner M, Toribio L, Salvador S, Sanmartín A, de la Fuente M, Santos JF, de Juan FJ, Moraleda S, Méndez JL, Ramírez L, Casado RM. Efficacy, safety and predictive factors of therapeutic success with sildenafil for erectile dysfunction in patients with different spinal cord injuries. Spinal Cord 2001;39:637-643.
18. Maxwell DJ, Granat MH, Baardman G, Hermens HJ. Demand for and use of functional electrical stimulation systems and conventional orthoses in the spinal lesioned community of the UK. Artif Organs 1999;23:410-412.
19. Pryor JL, LeRoy SC, Nagel TC, Hensleigh HC. Vibratory stimulation for treatment of anejaculation in quadriplegic men. Arch Phys Med Rehabil 1995;76:59-64.
20. Hirsch IH, Seager SW, Sedor J, King L, Staas WE Jr. Electroejaculatory stimulation of a quadriplegic man resulting in pregnancy. Arch Phys Med Rehabil 1990;71:54-57.
21. Leeton J, Yates C, Rawicki B. Successful pregnancy using known donor oocytes fertilized in vitro by spermatozoa obtained by electro-ejaculation from a quadriplegic husband. Hum Reprod 1991;6:384-385.
22. Iwatsubo E, Okada E, Takehara T, Tamada K, Akatsu T. Selective intrathecal phenol block to improve activities of daily living in patients with spastic quadriplegia. A preliminary report. Paraplegia 1994;32:489-492.
23. Heller L, Keren O, Aloni R, Davidoff G. An open trial of vacuum penile tumescence: constriction therapy for neurological impotence. Paraplegia 1992;30:550-553.
24. Lombardi G, Mondaini N, Macchiarella A, Del Popolo G. Female sexual dysfunction and hormonal status in spinal cord injured (SCI) patients. J Androl 2007;28:722-726.
25. Sipski ML. The impact of spinal cord injury on female sexuality, menstruation and pregnancy: a review of the literature. J Am Paraplegia Soc 1991;14:122-126.
26. Pryor JL, Kuneck PH, Blatz SM, Thorp C, Cornwell CE, Carrell DT. Delayed timing of intrauterine insemination results in a significantly improved pregnancy rate in female partners of quadriplegic men. Prog Urol 2001;11:1264-1268.
27. Halstead LS, Seager SW, Houston JM, Whitesell K, Dennis M, Nance PW. Relief of spasticity in SCI men and women using rectal probe electrostimulation. Paraplegia 1993; 31:715-721.
28. Yamamoto M, Momose H, Yamada K. Fathering of a child with the assistance of electroejaculation in conjunction with intracytoplasmic sperm injection: case report. Spinal Cord 1997;35:179-180.
29. Moreno JG, Chancellor MB, Karasick S, King S, Abdill CK, Rivas DA. Improved quality of life and sexuality with continent urinary diversion in quadriplegic women with umbilical stoma. Arch Phys Med Rehabil 1995;76:758-762.
30. Anderson CJ, Mulcahey MJ, Vogel LC. Menstruation and pediatric spinal cord injury. J Spinal Cord Med 1997;20: 56-59.
31. Berard EJ. The sexuality of spinal cord injured women: physiology and pathophysiology. A review. Paraplegia 1989;27:99-112.