



TWIN PREGNANCY IN A WOMAN WITH SPINAL CORD INJURY (SCI): A CASE REPORT

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Received for publication: May 16, 2015; **Revised:** June 11, 2015; **Accepted:** July 18, 2015

Abstract: Pregnancy in women with spinal cord injury (SCI) is associated with various complications. Pregnant women with spinal cord lesions are at a greater risk of many medical complications, compared to healthy women. These complications include urinary tract infections, venous thrombosis, anemia, autonomic hyperreflexia, increased spasticity, bladder spasm, dys-autonomia, and pressure sores; some of these complications may be even life-threatening. Herein, we report a case of a 41-year-old woman with SCI and twin pregnancy.

Key words: Twin pregnancy; spinal cord injury; complications of SCI

INTRODUCTION

Spinal cord injury (SCI) refers to injuries to spinal cord, resulting in changes in the normal motor, sensory, or autonomic function of the cord. These injuries can be either permanent or temporary and may occur due to trauma or conditions such as transverse myelitis, spina bifida, and Friedreich's ataxia (1, 2).

SCI has a wide range of symptoms (e.g., pain, paralysis, and incontinence), with different levels of severity (complete or incomplete). The rate of paralysis due to SCI is reported to be 0.4% in the U.S. population (3). The number of women with SCI at reproductive age is estimated at 52,000 people in the U.S.A. In addition, 2,400 new cases are expected to occur each year (2).

SCI is associated with many complications. Pregnant women with spinal cord lesions are at a greater risk of these medical complications, compared to healthy women. The complications of SCI in pregnancy include urinary tract infections (UTIs), venous thrombosis, anemia, autonomic hyper reflexia, increased spasticity, bladder spasm, dysautonomia, and pressure sores (4).

Preterm labor and unattended delivery are more common in pregnant women with SCI (5). Furthermore, inducing anesthesia is more risky in these women, compared to normal women. Although SCI results in many complications, there are no data indicating the decreased fertility of these patients. However, lower rates of menstrual cramping have been reported in previous research (6). Considering the life-threatening risks facing pregnant women with SCI, methods of delivery in these women need to be further evaluated. Additionally, there are social concerns about child care in these cases; however, few studies have

been performed on this population (7). Herein, we report a case of a 41-year-old pregnant woman presenting with SCI. In addition, we investigated the complications associated with SCI during pregnancy.

CASE REPORT

A 41-year-old woman with twin pregnancy, G7, L5, Ab1, and P5 (five vaginal deliveries & one miscarriage) was admitted to the hospital on January 20, 2014; she was having her seventh pregnancy, with a 10-year interval since her last childbirth. She had suffered from SCI (C5-C6 tetraplegia) and paralysis of both legs for four years (paraplegia and proximal upper limb; Proximal 3.5 and distal 15.1). The patient, residing in a village of Torbat-e Jam city (located in northeast of Iran), was married and her pregnancy was unwanted.

The patient had hepatitis B surface antigen (+HbsAg), UTI, moderate anemia refractory, and decubitus ulcers. Also, she had suffered from pyelonephritis and bedsores during her pregnancy. The patient's body mass index (BMI) was lower than 17.5 kg/m² and she had a prior history of aspiration pneumonia in 2011; also, in her previous pregnancy, she had been diagnosed with refractory anemia.

At the beginning of her treatment, she was consulted by a gynecologist and a neurologist. Given her critical condition (autonomic dysreflexia, aspiration pneumonia, and decubitus ulcers), she was referred to a coroner for terminating her pregnancy in the ninth week of pregnancy. Since abortion is illegal in Iran, her request was not granted and prenatal care was performed by a medical team consisting of a social worker, a midwife, and a physician; also, she was consulted by a dietitian.

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Table 1: Blood cell analysis in the third month of pregnancy

White blood cell (WBC)	4.5	$\times 10^3/MI$	Blood Group	B+ Positive
Red blood cell (RBC)	3.46	$\times 10^6/M$	HBSAg	Positive
Haemoglobin (Hb)	9.8	g/L	Neut	49%
Haematocrit (Hct)	28.2	%	Lym	39%
Mean corpuscular volume (MCV)	81.5	73-91fL	Mono	5%
Mean corpuscular hemoglobin (MCH)	28.3	27-33 pg	Mixed (mono+Eoso+Baso)	7
Mean cell hemoglobin concentration (MCHC)	34.8	33-36 g/lld	B HCG	Positive
Plt	138	$\times 10^3/MI$	Beta. HCG. serum- (RIA)	>500 IU/L

Floating mats, urinary catheter, and food supplements were purchased by donors and the rural health care center. Routine pregnancy tests were performed in order to ensure the mother's health. The obtained results related to blood cell analysis in the third month of pregnancy are shown in table 1.

First, a Foley catheter was used for two weeks during pregnancy. However, since the patient was diagnosed with pyelonephritis, the Foley catheter was removed and a Nlatvn catheter was used until the end of pregnancy. The patient was consulted by an internist for controlling the difficulties arising from hepatitis Band was monitored by a gynecologist during pregnancy.

She did not use any other medications except ferrous sulfate and multivitamins, which were used before and during pregnancy. Also, she did not receive any anticoagulants and use of epidural anesthesia and spinal anesthesia was suggested by the neurologist to prevent autonomic dysreflexia during delivery. However, as the gynecologist suggested, there was no need for using anesthesia during childbirth. Normal vaginal delivery (NVD) was suggested by both the neurologist and gynecologist. Finally, the patient delivered vaginally on January 20 at 22:50p.m. The exact time of the premature rupture of membranes was 22:10 p.m., and the placenta was delivered seven minutes later at 22:53 p.m. The delivery was performed by the gynecologist. The patient had light atonic uterine bleeding which was controlled during delivery (hematocrit: 33%-29%). She did not require episiotomy and gave birth in the lithotomy position.

Both babies were boys and were born in the 36th week of pregnancy in January 2014. The Apgar scores of two babies were 9 and 10 and their weight, height, and head circumference were 2.200 and 2150 kg, 48 and 47 cm, and 33 and 33 cm, respectively. The Apgar scores of the infants are shown in table 2.

The infants were administered immunoglobulin and hepatitis B vaccines. They were admitted to the NICU due to weak sucking reflex for two days. Finally, they were discharged with a good condition.

Table 2: The Apgar scores of two infants

Signs	First baby		Second baby	
	First Minute	Five minutes	First Minute	Five minutes
Color	1	2	1	2
Heart rate	2	2	2	2
Response to stimulation	2	2	2	2
Train muscle	2	2	2	2
Breathing	2	2	2	2
Total	9	10	9	10

The delivery of the infants was almost uncomplicated (notachy cardiaortachypnea). Postpartum pulmonary embolism was evaluated and the necessary measures were taken to overcome any associated problems. Then, the patient was consulted by a neurologist and received anticoagulants. The results of blood cell and urine analysis on days ten, eleven, and thirteen after delivery are shown in tables 3, 4, and 5.

Table 3: Blood cell and urinary analysis ten days after delivery

Blood cell analysis			Urinary analysis	
WBC	7.8	$\times 10^3/MI$	Color	Yellow
RBC	4.51	$\times 10^6/M$	Appearance	Semi clear
Hb	12.4		Specific Gravity	1000
Hct	35.1	%	PH	7
MCV	77.8	73-91fL	Sugar	Neg.
MCH	27.5	27-33 pg	Protein	Neg.
MCHC	35.3	33-36 g/lld	Acetone	Neg.
Plt	185	$\times 10^3/MI$	Bilirubin	Neg
Neutrophil	72	%	Urobilinogen	Neg
Lym	22	%	Nitrite	Neg.
Mixed (mono+eoso+baso)	6	%	White Blood Cell(WBC)	0-2
			Red Blood Cells(RBC)	0-1
			Epithelial	2-3
			Bacteria	1

Table 4: Blood cell analysis after delivery

WBC	9.5	$\times 10^3/MI$	Neut	74
RBC	3.7	$\times 10^6/M$	Lym	19
Hct	29.7	%	Mono	
MCV	80.3	73-91fL	Mixed (mono+Eoso+Baso)	7
MCH	26.5	27-33 pg	Coagulation	
MCHC	33	33-36 g/lld	Patient PT	14
Plt	143	$\times 10^3/MI$	INR	1.2
Hct	79.7	%		
Hb	9.8	Hb		

Table 5: The urinary analysis thirteen days after delivery

Color	Yellow	Urobilinogen	+
Appearance	Semi clear	Nitrit	14-15
Specific gravity	1025	White Blood Cell(WBC)	3-4
PH	5	Red Blood Cell(RBC)	7-8
Protein	Neg.	EP. Cell	+
Glucose	Neg.	Bacteria	Neg.
Ketones	Neg.	Mucus	Neg.
Blood	Neg.	Casts	Neg.
Bilirubin	Neg.	Yeast	Neg.

According to the neurologist, she had no distress or emergency conditions. Also, she was consulted by an internist after the delivery and heparin was prescribed for her. The patient's general condition was good and postpartum care was provided at home.

DISCUSSION

Transient amenorrhoea has been reported in patients suffering from SCI due to traumatic accidents. However, normal menstrual cycle resumes in the majority of patients within six months. In total, the fertility process does not stop in patients with SCI after traumatic accidents(8, 9).

As we know, traumas are the most common cause of SCI; however, SCI may occur as a result of hereditary or congenital factors (10). Our patient had a road traffic accident about 4 years ago and she had a regular menstrual cycle. In total, the probability of congenital malformations or intrauterine fetal death is higher in patients with SCI, compared to the general obstetric population (10, 11). In our study, routine pregnancy tests were performed in order to estimate the well-being and weight of the fetus. The obtained test results showed no harm to the fetuses.

Our patient suffered from UTI during her pregnancy. In fact, Indwelling catheters and neurogenic bladder can lead to UTI, which is a common complication in patients with SCI. The results of a study by Stering *et al.*, showed that patients with SCI have high rates of UTI during pregnancy (5). Another study showed that UTI symptoms become more severe in 51% of pregnant women with SCI(4). Moreover, UTI can lead to low birth weight and preterm labor; this point has been confirmed by many previous studies (5).

Frequent urinary cultures or antibiotic suppression are recommended for overcoming UTI in patients with SCI. According to Salomon's study, weekly use of oral cyclic antibiotics leads to decreased rate of UTI in pregnant women with SCI (9). Ongoing monitoring of UTI and use of antibiotic prophylaxis as an appropriate treatment for UTI have been suggested by the American Congress of Obstetricians and Gynecologists(2). Our patient was suspected to have

pyelonephritis; therefore, nitrofurantoin was used for the treatment of UTI.

Impaired pulmonary function is another complication associated with SCI in pregnant paraplegic women; moreover, it is highly frequent in patients with high thoracic or cervical spine lesions (10). In this study, the necessary measures were taken to overcome pulmonary embolism in our patient.

To prevent constipation, stool softeners and high-fiber diets are recommended for patients with SCI. Also, excess weight gain and immobilization lead to decubitus ulcers in patients with SCI (10). In our patient, the calculated BMI was 17.5 kg/m², which is lower than the normal range.

Sensitivity to orthostatic hypotension has been reported in patients with SCI. In total, the systemic vascular resistance decreases in pregnant patients with SCI. SCI leads to the loss of sympathetic innervation below the level of the spinal cord lesion. It also leads to the increased risk of hypotension. However, there were no symptoms of hypotension (dizziness or sensation of faint) in our case.

Our patient had moderate anemia refractory and bedsores. Anemia is known as a pregnancy-associated complication in patients with SCI. Treatment of anemia could decrease the risk of decubitus ulcers; therefore, it should be promptly treated (10).

The most serious complication of SCI is autonomic dysreflexia (ADR). ADR occurs in 85% of patients with injuries at or above T6 and is more commonly seen in the cervix. The most common symptoms of ADR include hypertension, hyperthermia, piloerection, respiratory distress, pupil dilation, loss of consciousness, convulsions, and increased extremity spasticity (7). In some cases, ADR leads to fetal hypoxaemia and bradycardia or is misdiagnosed as preeclampsia during labor.

Since sympathetic over activity below the SCI leads to hypertension and headaches and may lead to preeclampsia symptoms(12), an accurate diagnosis can be life-saving and the appropriate management of preeclampsia is required for the delivery of the fetus.

Hypertensive encephalopathy, cerebrovascular accidents, intra ventricular haemorrhage, and retinal haemorrhage are the complications of delayed therapy in ADR. Despite the high prevalence of ADR in pregnant women with SCI, there were no ACR symptoms in our patient. In our case, NVD was performed without spinal anesthesia. Also, the patient's general condition was good. Sterilization was

not performed due to the possible anesthesia-related complications and the risk of hypotension. She was discharged from the hospital and postpartum care was provided at home.

CONCLUSION

Pregnancy in women with SCI poses high risks to both the mother and fetus. The rate of amenorrhea after SCI is estimated at 38% in Iranian women and is mostly provisional. In most cases, the menstrual cycle goes back to normal and is not affected by the injury severity, age, or future accidents (13). Considering the high risk of pregnancy in patients with SCI and multiple medical issues, contraceptive methods should be applied by these patients.

REFERENCES

- Center. NSCIS. Spinal cord injury facts and figures at a glance. Birmingham: University of Alabama; 2009.
- American College of Obstetricians and G. ACOG Committee Opinion: Number 275, September 2002. Obstetric management of patients with spinal cord injuries. *Obstetrics and gynecology*. 2002; 100(3):625.
- Cardenas D. Spinal Cord Injury Rehabilitation, an Issue of Physical Medicine and Rehabilitation Clinics of North America: Elsevier Science Health Science; 2014.
- Ghidini A, Healey A, Andreani M, Simonson MR. Pregnancy and women with spinal cord injuries. *Acta obstetrica et gynecologica Scandinavica*. 2008; 87(10):1006-10.
- Sterling L, Keunen J, Wigdor E, Sermer M, Maxwell C. Pregnancy outcomes in women with spinal cord lesions. *J Obstet GynaecolCan*. 2013; 35(1):39-43.
- Dillaway H, Cross K, Lysack C, Schwartz J. Normal and natural, or burdensome and terrible? Women with spinal cord injuries discuss ambivalence about menstruation. *Sex roles*. 2013; 68(1-2):107-20.
- Nor Azlin MI, Abd Rahman R, Abdul Karim AK, Sulaiman AS, Mahdy ZA. Feasibility of successful pregnancies in women with spinal injury. *Journal of Obstetrics & Gynaecology*. 2013; 33(6):631-2.
- Dawood R, Altanis E, Ribes-Pastor P, Ashworth F. Pregnancy and spinal cord injury. *The Obstetrician & Gynaecologist*. 2014; 16(2):99-107.
- Salomon Jrm, Schnitzler A, Ville Y, Laffont I, Perronne C, Denys P, et al., Prevention of urinary tract infection in six spinal cord-injured pregnant women who gave birth to seven children under a weekly oral cyclic antibiotic program. *International Journal of Infectious Diseases*. 2009; 13(3):399-402.
- Castro JS, Lourenço Ct, Carrilho M. Successful pregnancy in a woman with paraplegia. *BMJ case reports*. 2014; 2014: bcr2013202479.
- Signore C, Spong CY, Krotoski D, Shinowara NL, Blackwell SC. Pregnancy in women with physical disabilities. *Obstetrics & Gynecology*. 2011; 117(4):935-47.
- Pereira L. Obstetric management of the patient with spinal cord injury. *Obstetrical & gynecological survey*. 2003; 58(10):678-86.
- Rahdari F, Khoi EM, Latifi S, Matin M, Hajiaghbabaei M. Prevalence of Amenorrhea and Abortion in Spinal Cord Injured Women in Iran. *J Womens Health, Issues Care* 3. 2014; 2:2.

CITE THIS ARTICLE AS:

Zeinab Houshyar, Somayeh Rezvand, Maryam Jorfi and Poorandokht Afshary, Twin Pregnancy In A Woman With Spinal Cord Injury (SCI): A Case Report, *International Journal of Bioassays*, 2015, 4 (08), 4247-4250.

Source of support: Nil

Conflict of interest: None Declared