Rehabilitation Practice and Science

Volume 30
Issue 3 *Taiwan Journal of Physical Medicine and Rehabilitation (TJPMR)*

Article 1

9-1-2002

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Background: This study focused on the differences in incidence, mortality, epidemiology, causes, risk factors, severity, and prognosis between two groups of patients; a stroke-during-pregnancy (SDP) group and a stroke-of-young-female (SYF) group with similar physical status. We investigated whether pregnancy was a contributing factor to stroke, and reviewed the maternal characteristics and fetal outcome for patients suffering from stroke during pregnancy.

Methods: Based on a restrospective analysis of stroke occurring during pregnancy and in young female patients during the 8-year period from January 1991 to February 1999 at Kaohsiung ST. Joseph Hospital and Chang-Gung Hospital. In both groups, all patients underwent diagnostic procedures, including history taking, neurological examination, extensive laboratory testing, and neuroimaging studies. Also included were the obstetric histories and complications of the SDP group.

Results: During this 8-year period, there were 11 stroke patients among 31175 pregnant women, yielding an incidence of about 0.035 % in the SDP group. At the same time, there were 32558 stroke patients, including 349 young women, with an incidence of 1.1 % in the SYF group. Both groups had high mortality rates (about 18 %). Compared with the SYF group, the SDP group was younger (28.5 vs 34.0 years, $P < 0.001$), and had higher rates of consciousness changes (64% vs 28%) and seizures (55% vs 6%) as initial stroke symptoms. However, there were no significant differences in other aspects, such as mortality rate, type of stroke, motor impairment and recovery, complication rate and average number of admission days. Moreover, the babies of the SDP group had a higher mortality rate (9% vs 0.67%) and lower birth weight (2.5 vs 3.4 kg) than Taiwanese newborns in general. This combined with low Apgar scores and low maternal coma scale scores among the patients having emergent cesarean deliveries.

Conclusions: Although stroke in both groups caused high mortality and morbidity, the pregnancy factor did not cause increased severity in a majority of aspects. There were similar prognoses among SYF patients for neurological sequelae and functional status in this study, whether the patient was pregnant or not. (J Rehab Med Assoc ROC 2002; 30(3): 131 - 140)

Key words: stroke, pregnancy, young female

INTRODUCTION

Recently, maternal deaths resulting directly from obstetric causes have been decreasing, but the role of nonobstetric factors, such as stroke, in maternal mortality has become more important. Although stroke rarely happens during pregnancy, it results in high rates of

Submitted date: 20 March 2002. Revised date: 10 June 2002. Accepted date: 18 June 2002.

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maternal and fetal mortality and morbidity. Research is warranted to determine whether there is any relationship between severity, prognosis and pregnancy.

This study focused on the differences in incidence, mortality, epidemiology, causes, risk factors, severity, and prognosis between a stroke during pregnancy group and a young female stroke group in similar physical condition. In addition, we investigated whether pregnancy was a prognostic factor. Finally, we also looked at maternal characteristics and fetal outcome in stroke during pregnancy.

METHODS

This study was based on a restrospective analysis of stroke-during-pregnancy (SDP) and stroke-in-young-female (SYF) patients during the 8-year period from January 1991 to February 1999 at Kaohsiung ST. Joseph Hospital and Chang-Gung Hospital. Stroke was defined using the World Health Organization (WHO) criteria as a rapidly developing clinical sign of focal or global disturbance of cerebral function which lasted more than 24 hours or leading to death, with no apparent cause other than vascular origin. Young female stroke was defined as stroke in women younger than 45 years old. By definition, cases of transient ischemic attack, brain tumor, and trauma were excluded.

All patients were classified into two groups: SDP and SYF; and underwent diagnostic procedures, including history taking, neurological examination, extensive laboratory tests, and neuroimaging studies (brain computed tomography [CT], magnetic resonance imaging [MRI], and angiography). Also included were the obstetric histories (e.g., parity, age, gestational age at the onset of stroke, maternal outcome, mode of delivery, and fetal outcome) and obstetric complications (e.g., preeclampsia and intrauterine fetal distress) of the SDP group.

We used Brunnstrom's staging system to evaluate motor impairment, categorized with stage I and II as low stage (L), stage III and IV as moderate stage (M), and stage V and VI as high stage (H), while upper extremities (U/E) and lower extremities (L/E) were also classified and recorded during admission and discharge. Furthermore, we used the "Barthel Index" (total score = 100, including 10 items: feeding, bathing, grooming, dressing, toileting, chair/bed transferring, mobility, stair climbing, and bladder and bowel control) to record the activities of daily living on admission and at discharge.

For statistical evaluation, the differences between the two groups in this study were analyzed with the following three methods: T-test analysis was used to compare age distribution, admission and discharge Barthel index scores, average number of days of admission, and average baby birth weight. In addition, the linear-by-linear association method was used to analyze motor impairment recovery during hospitalization. All other variables in these two groups, such as the type of stroke, risk factors, initial symptoms and other neurological deficits of stroke, complications during hospitalization, and upper and lower limb motor impairment upon admission and at discharge were evaluated by Chi-square method. Statistical significance was determined at $P < 0.05$ unless otherwise stated.

RESULTS

During these 8 years, there were 11 stroke patients among 31175 pregnant women, resulting in an incidence of stroke of 0.035 % in the SDP group. Unfortunately, two patients died of acute brain edema, resulting in a mortality rate of approximately 18% (2/11). At the same time, there were 32558 stroke patients, including 349 young-female-stroke patients, resulting in an incidence rate of 1.1 % in the SYF group. Sixty-three patients died, resulting in a mortality rate of 18 % (63/349).

Age distribution (Figure) in the SDP group was mostly between 26 and 30 years old; there were no older pregnant women. Their average age was 28.5 ± 3.1 years, whereas that of the SYF group was 34.0 ± 11.7 years. The SDP group was significantly younger than the SYF group ($P < 0.001$).

For type of stroke (Table 1), hemorrhagic stroke was most common in both SDP and SYF groups (82% and 59%), but there was no significant difference between the groups ($P > 0.05$). Intracranial hemorrhage (ICH) was highest in both groups (78% and 70%), followed by subarachnoid hemorrhage (SAH) and subdural hemorrhage (SDH). Rupture of aneurysm and arteriovenous malformation (AVM) were the most likely causes. The causes could not be determined in approximately 40% of each group even with detailed examinations, such as MRI and angiography.

Table 1. Type, presentation, and risk factors of stroke

	SDP No. (%)	**SYF** No. (%)
Total	**11**	**349**
Hemorrhage	9 (82)	206 (59)
Infarction	2 (12)	143 (41)
Subtype of Hemorrhagic stroke		
ICH	7 (78)	149 (70)
SAH	2 (22)	61 (28)
SDH	0	3 (2)
Aneurysm	2 (22)	44 (21)
AVM	2 (22)	25 (12)
Cavernous hemangioma	1 (11)	3 (2)
Moya-moya disease	0	3 (2)
Unknown	4 (44)	131 (38)
Initial stroke symptom		
Consciousness change	7 (64)	98 (28)
Seizure	6 (55)	20 (6)
Vomiting	4 (36)	38 (11)
Hemiplegia	4 (36)	116 (33)
Headache	2 (18)	63 (18)
Dysarthria	0	17 (5)
Risk factor		
Hypertension	3 (27)	112 (32)
Preeclampsia/eclampsia	2 (18)	
Diabetes Mellitus		36 (11)
Heart disease	1 (9)	36 (10)
Hyperlipidemia		30 (9)
Old stroke	1 (9)	18 (6)
Autoimmune disease		14 (4)
Renal disease		14 (4)
Hematological disease	1 (9)	13 (3)
No risk factor	5 (45)	152 (44)

SDP = stroke during pregnancy; SYF = stroke of young female; ICH = Intracerebral hemorrhage; SAH = subarachnoid hemorrhage; SDH = subdural hemorrhage; AVM = arteriovenous malformation

Regarding stroke locations in the SDP group, 45% (5) had right-side lesions, 36% (4) had left-side lesions, and 19% (2) had bilateral lesions. The SYF group had 40% (141) right-side lesions, 45% (157) left-side lesions, and 15% (51) bilateral lesions. No significant difference between the two groups was found ($p = 0.845$). Moreover,

supratentorial lesions were most common in both groups (91% and 88%).

The most initial stroke symptoms in the SDP group were consciousness changes (64%), seizures (55%), and vomiting (36%). The incidence of these symptoms was higher than that of the SYF group (all $p < 0.05$). There were two major risk factors common in the SDP group; hypertension at 27% (3) and preeclampsia or eclampsia at 18% (2). However, the most common factors in the SYF group were hypertension, 32% (112), diabetes mellitus, 11% (36), and heart disease, 9%(30). Unknown risk factors were as high as 45% in both groups.

As for motor impairment (Table 2), most of the patients in these two groups had low and high stage impairment of the upper and lower limbs upon admission. There was no significant difference in the severity of impairment (U/E, P=0.826; L/E, P=0.983). When discharged, high stage was the most common in both groups, with no significant difference (U/E, P=0.611; L/E, P=0.888). In addition, the upper and lower limbs of the SYF group had made apparent progress in motor impairment recovery by the time of discharge (U/E & L/E, both $P<0.001$), but the progress of the SDP group had no statistical significance (U/E, P=0.447; L/E, P=0.488). This may have been related to the low number of cases (N=11).

There was no significant difference in the daily activities (Barthel index) between the two groups upon admission ($P = 0.821$) and by the time of discharge ($P = 0.651$). Moreover, there was apparent progress in the SDP group (15 ± 17) ($P < 0.05$), and in the SYF group (12 ± 18) ($P < 0.05$). Nevertheless, the progress of the two groups had no significant difference ($P = 0.628$).

For other neurological deficiencies, such as dysphagia, dysarthria, aphasia, sensory deficits, and urine/stool incontinence, the impairment rate was similar in both groups. The active rehabilitation treatment rate of the two groups had similar percentages (27% vs 25%). While in rehabilitation, two patients were in the postpartum state, and another was still pregnant in the SDP group. For the craniotomy treatment rate, these two groups were similar (27% vs 25%). In the SDP group, three patients underwent craniotomy, two patients for whom it was combined with emergent cesarean delivery, and the other patient who continued her pregnancy after the operation.

The two groups had similar complication rate percentages during hospitalization (27% vs 28%, $P>0.05$). The most common complications in the SDP group were musculoskeletal pain (18%), urinary tract infection (9%), and pneumonia (9%). No obstetric complications were noted.

Between the two groups, there was no significant difference in the average number of days of admission on the acute neurological ward ($P = 0.472$) and the rehabilitation ward ($P = 0.975$).

Furthermore, among the 11 patients in the SDP group (Table 3), first time pregnancy was the most common (55%), followed by second pregnancy (36%). The highest stroke percentage (64%) occurred during the third trimester. The most common delivery method was cesarean (82%), including emergent cesarean section (C/S) (44%) and term C/S (56%).

Regarding the condition of the baby, a single baby delivery was the most common (91%) and the percentage of male vs female newborns was similar (45% vs 55%). For the majority of babies, the Apgar score at 1 and 5 minutes was higher than 5 points. The average birth weight was 2.5 ± 0.8 kg, and the mortality rate was approximately 9%. To date, there have been no complications such as mental retardation or congenital anomaly.

As for those patients receiving C/S, the score of the emergent C/S group was lower than the term C/S group on the initial maternal coma scale (all = 3 vs all > 9), for 1 and 5 minute Apgar scores (all < 8 vs all > 9), and average birth weight (1.6 ± 0.6 vs 2.7 ± 0.1 kg, $P < 0.05$, t-test). The causes of emergent C/S for these pregnant women included mother's death, eclampsia and fetal distress. In addition, two babies received cardiopulmonary resuscitation, one died and his mother also died. The major reason of this dead baby was too low birth weight (1.3 kg).

DISCUSSION

In this study, the incidence of stroke during pregnancy was low (35/100 000). Variable incidences have been reported ranging from one in 26 000 in Minnesota[1] to as high as one in 500 in India.[2] Although stroke is rare in otherwise healthy young women, the incidence is reported to increase with pregnancy.[3,4]

Table 2. Outcome of neurological sequelae

		SDP (11) No. (%)		**SYF** (349) No. (%)	
Mortality		2 (18)		63 (18)	
Motor impairment		(A)	(D)	(A)	(D)
U/E :	L =	5 (45)	3 (27)	154 (44)	106 (30)
	M =	2 (18)	3 (27)	44 (13)	56 (16)
	H =	4 (37)	5 (46)	151 (43)	187 (54)
L/E :	L =	4 (37)	3 (27)	134 (38)	84 (24)
	M =	2 (18)	1 (9)	57 (16)	49 (14)
	H =	5 (45)	7 (64)	158 (46)	216 (62)
ADL (average BI score)		(A)	(D)	(A)	(D)
		45 ± 26	60 ± 36	44 ± 24	56 ± 32
Improvement		15 ± 17		12 ± 18	
U/S incontinence		4 (36)		53 (15)	
Dysphagia		4 (36)		80 (23)	
Sensory deficit		4 (36)		109 (31)	
Dysarthria		2 (18)		68 (19)	
Aphasia		2 (18)		55 (16)	
Craniotomy		3 (27)		86 (25)	
Active rehab. training		3 (27)		81 (23)	
Average admission days					
Neuro. ward		19 ± 29		12 ± 11	
Rehab. ward		31 ± 14		30 ± 21	
Complication		3 (27)		96 (28)	
M-S pain		2 (18)		20 (6)	
Urinary tract infection		1 (9)		33 (9)	
Pneumonia		1 (9)		22 (6)	
Seizure				14 (4)	
Sepsis				12 (3)	
Upper gastroenteral bleeding				11 (3)	
Bedsore				3 (1)	
Recurrent stroke				2 (0.5)	

SDP = stroke during pregnancy; SYF = stroke of young female patients; (A) = admission; (D) = discharge
U/E = upper extremity; L/E = lower extremity; L= low stage; M = moderate stage; H = high stage;
ADL = activities of daily living,; M-S pain = musculoskeletal pain; U/S = urine or stool; BI = Barthel Index

Table 3. Status of pregnancy and baby

		SDP (11) No. (%)
Status of Pregnancy		
Parity		
1st pregnancy		6 (55)
2nd pregnancy		4 (36)
3rd pregnancy		0
4th pregnancy		1 (9)
Time of stroke		
1st trimester		2 (18)
2nd trimester		2 (18)
3rd trimester		7 (64)
Delivery method		
V D		2 (18)
C / S		9 (82)
Emergent C/S		4 (44)
Term C/S		5 (56)
Status of Baby		
Number		
Single birth		10 (91)
Twin birth		1 (9)
Sex		
Male		5 (45)
Female		7 (55)
Apgar score		
One minute —	< 4	2 (18)
	> 5	9 (82)
Five minutes —	< 4	1 (9)
	> 5	10 (91)
CPR		2 (18)
Mortality		1 (9)
Average body weight (kg)		2.5 ± 0.8
Complications (to date)		nil

SDP = stroke during pregnancy; VD = vaginal delivery; C/S = cesarean delivery;
CPR = cardiopulmonary resuscitation

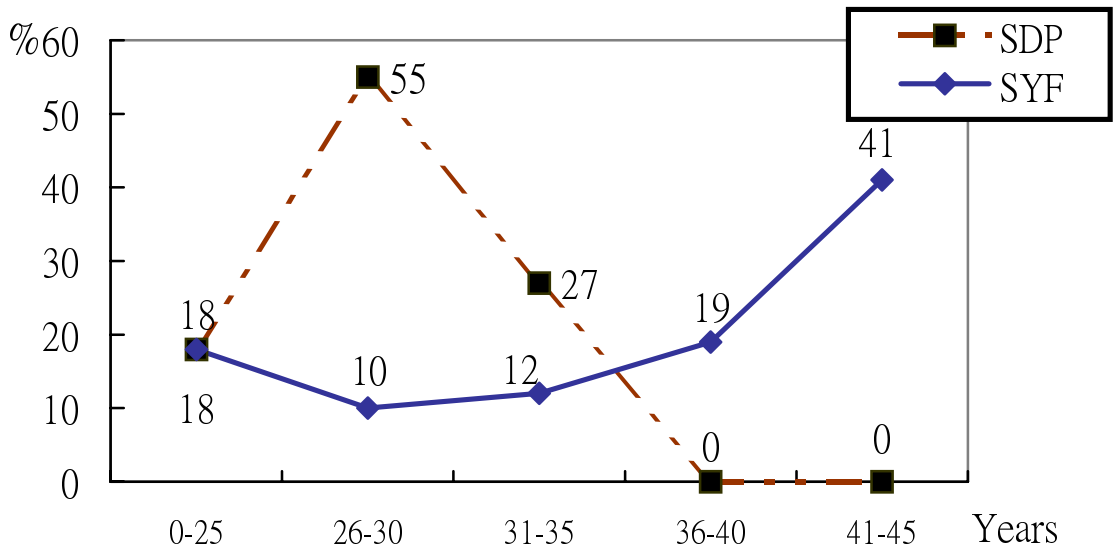

Figure. Comparison of the age distribution percentage (%) between the stroke during pregnancy (SDP) group and the stroke of young female (SYF) group.

Compared with the recently reported maternal mortality rate by the Taiwan Provincial Maternal and Child Health Institute (about 7.7/100 000), the mortality rate of the SDP group is higher (18%). It is obvious that stroke is a high risk factor during pregnancy. Besides, considering the similar 18 % mortality rate of the SYF group, the death rate of young women with stroke is high whether they are pregnant or not. The pregnancy factor did not increase stroke mortality in young women. In our study, death most often occurred within a few days of a stroke. Increasing intracranial pressure succeeding rostrocaudal herniation due to large infarction (or hemorrhage) or severe complications (such as pneumonia or sepsis) resulting in cardiopulmonary failure were the most common causes of death. Therefore, once stroke occurs, the neurologist should intervene early to avoid mortality.

The majority of the young female stroke patients were aged 41 to 45 years. The increasing incidence with age was similar to other reports.[5,6] In this study, there were no older pregnant women who had strokes, with the majority being 26 to 30 years old. There was no change in stroke incidence with increasing age in pregnancy. Therefore, age was not an apparent factor affecting the incidence of stroke during pregnancy.

Hemorrhagic strokes were the most common type in both SDP and SYF groups, and cerebral hemorrhage was more common in Oriental than in Occidental people.[7-10] Although several reports[11-13] indicated that pregnancy might increase the risk of hemorrhagic stroke, there was no significant difference in this study (P>0.05). Moreover, ICH cases were common in both groups (78% vs 70%). The surprisingly high incidence of ICH in our study was attributed to the prevalence of hypertension (27% vs 32%), and was consistent with other reports.[14]

Ruptured aneurysms and AVM were the most common causes of hemorrhagic stroke in both groups. Pregnancy did not increase the risk of bleeding (P>0.05); also similar to other reports.[4,15] Although 5% to 7% of patients with AVM will rebleed without surgical therapy, immediate resection is still controversial.[16]

Seizure as the initial stroke presentation was higher in the SDP group (55% vs 6%), and this was similar to the report of Kilpatrick et al.[17] In part, this was because 18% of the patients had a history of eclampsia. Therefore, once the initial seizures occur during pregnancy, the possibility of stroke must be excluded because the incidence of seizures was as high as 55%.

There was no significant difference between SDP and SYF groups in motor impairment and functional

activities upon admission and by the time of discharge. Pregnancy did not affect motor impairment or functional activities. Besides, functional recovery for pregnant women was as good as for non-pregnant patients (improved Barthel index 15 ± 17 vs 12 ± 18, P= 0.628). Similarly, both groups reached nearly the same extent of recovery in motor impairment. So, from the viewpoint of rehabilitation, the patients of both groups could receive active training, and both could make significant progress. Therefore, pregnancy was not a factor which hindered progress and recovery.

During hospitalization, there were similar complication rates in both groups (27% for SDP vs 28% for SYF), especially for musculoskeletal pain, UTI, and pneumonia. No obstetric complications were noted. Therefore, pregnancy may not affect maternal complications. At the same time, fetal complications such as abortion and fetal distress were not discovered in this study. While handling such complications as UTI, pneumonia, and seizures, we still need to use appropriate medications like antibiotics and anticonvulsants in consideration of the fetus. As for musculoskeletal pain, we should avoid using nonsteroidal anti-inflammatory drugs (if necessary, acetaminophen should be the drug of choice).[18] Rest and physical therapy helped to relieve the symptom in some cases.

There was no decrease in the rate of neurosurgery performed in SDP group (P>0.05), but the adverse effect on the fetus from maternal hypotension and hypothermia caused by surgical procedures should be considered. Although emergent C/S carried the risk of lowering a baby's Apgar score and birth weight and raising mortality, emergent C/S still must be considered and can be followed immediately by neurosurgery if the maternal patients have severe neurological sequelae or a poor coma scale score. If the maternal status is stable, pregnancy may continue after neurosurgery if the fetus is premature.

Among pregnant stroke patients, nulliparous women (55%) were the most common. Vaginal delivery was not prohibited when the fetus was near term, and the decision for cesarean delivery was reserved for the obstetrician. The sex and number of babies did not affect the occurrence of stroke. In relation to stroke stress, newborn mortality (9%) was higher than general newborn mortality (0.67%) in Taiwan, and their average birth weight (2.5 ± 0.8 kg) was also lower, as reported by the Taiwan Provincial Maternal and Child Health Institute (3.4 ± 0.7 kg). The major reason of the babies' low birth weight from emergent C/S maybe due to premature, which easily caused fetal distress, and that caused low Apgar scores. To date, there have been no complications (such as mental retardation or congenital anomaly) in the surviving babies, but long-term follow-up is needed.

We conclude that early diagnosis and adequate treatment of stroke during pregnancy may be beneficial and reduce maternal mortality. Controlling risk factors like hypertension, preeclampsia, and eclampsia is also very important. Once the stroke condition is stable, active rehabilitation treatment may help the patient make progress to a functional status and recovery from neurological sequelae. Therefore, as long as we monitor the fetal condition carefully, there is no significant difference in many aspects of the prognoses of stroke during pregnancy and in young female patients in general.

REFERENCES

1. Wiebers DO, Whisnant JP. The incidence of stroke in pregnant women in Rochester, Minn, 1955 through 1979. JAMA 1985;254:3055-7.
2. Srinivasan K. Ischemic cerebral vascular disease in the young: two common causes in India. Stroke 1984;15: 733-5.
3. Jennett WB, Cross JN. Influence of pregnancy and oral contraception on the incidence of strokes in women of childbearing age. Lancet 1967;I:1019-23.
4. Wiebers DO. Ischemic cerebrovascular complications of pregnancy. Arch Neurol 1985;42:1106-13.
5. Nencini P, Inzitari D, Baruffi MC, et al. Incidence of stroke in young adults in Florence, Italy. Stroke 1988; 19:977-81.
6. Rozenthul-Sorokin N, Ronen R, Tamir A, et al. Stroke in the young in Israel: incidence and outcome. Stroke 1996;27:838-41.
7. Tanaka H, Hayashi M, Date C, et al. Epidemiologic studies of stroke in Shibata, a Japanese provincial city: preliminary report on risk factors for cerebral infarction. Stroke 1985;16:773-80
8. Ashok PP, Radhakrishnan K, Sridharan R, et al. Incidence and pattern of cerebrovascular disease in Benghazi, Libya. J Neurol Neurosurg Psychiatry 1986;

49:519-23.

9. Gross CR, Kase CS, Mohr JP, et al. Stroke in South Alabama: incidence and diagnostic features - a population based study. Stroke 1984;15:249-55.
10. Giroud M, Beuriat P, Vlon P, et al. Stroke in French prospective population study. Neuroepidemiology 1989; 8:97-104.
11. Sharshar T, Lamy C, Mas JL. Incidence and causes of strokes associated with pregnancy and puerperium: a study in public hospitals of Ile de France. Stroke 1995; 26:930-6.
12. Kittner SJ, Stern BJ, Feeser BR, et al. Pregnancy and the risk of stroke. N Engl J Med 1996;335:768-74.
13. Knepper LE, Giuliani MJ. Cerebrovascular disease in women. Cardiology 1995;86:339-48.
14. Brott T, Thalinger K, Hertzberg V. Hypertension as a risk factor for spontaneous intracerebral hemorrhage. Stroke 1986;17:1078-83.
15. Grosset DG, Ebrahim S, Bone I, et al. Stroke in pregnancy and the puerperium: what magnitude of risk ? J Neurol Neurosurg Psychiatry 1995;58:129-31.
16. Itoyama Y, Uemura S, Ushio Y, et al. Natural course of unoperated intracranial arteriovenous malformations: study of 50 cases. J Neurosurg 1989;71:805-9.
17. Kilpatrick CJ, Davis SM, Tress BM, et al. Epileptic seizures in acute stroke. Arch Neurol 1990;47:157-60.
18. Briggs GG, Freeman RK, Yaffe SJ. Drugs in Pregnancy and Lactation: A Reference Guide to Fetal and Neonatal Risk. 4th ed. Baltimore: Williams & Wilkins, 1990. p.225-7.

懷孕期間發生腦中風之預後

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臨床上，因懷孕期間發生腦中風的病例不多, 也一直沒有明確的統計以顯示其預後如何。本篇主要以年輕的女性中風病人爲對照組(stroke-of-young-female group, SYF)，收集從 1991 年至 1999 年間，在高雄天主教聖功醫院和高雄長庚醫院求診病例中，探討懷孕期間發生腦中風的病患(stroke-during-pregnancy group, SDP)，其發生率、死亡率、流行病學、致病因素、危險因子、嚴重度與預後爲何；並分析懷孕是否爲腦中風的致病因子。同時也探討所生嬰兒是否有不良的影響。

在這 8 年期間，共收集 31175 位懷孕婦女，其中 11 位發生腦中風(SDP，發生率 0.035%)。同時，在 32558 位腦中風病人中，共有 349 位是屬於年輕女性(小於 45 歲) (SYF，發生率 1.1%)。二組均有高死亡率(約 18%)。與 SYF 組比較，SDP 組在腦中風起始症狀中，有較高比率的意識變化(64% vs 28%)和抽搐表現(55% vs 6%)，但在其他方面，則二組無明顯差異。此外，SDP 組所生嬰兒比一般台灣地區新生兒有較高的死亡率(9% vs 0.67%)和較低出生體重(2.5 vs 3.4kg)。

雖然腦中風在這二組均造成高死亡率和罹病率，但“懷孕”這個因子在許多方面，並不會造成更嚴重的後果。在年輕的女性腦中風病患中，不論是否懷孕，均有相似的預後和功能恢復。（中華復健醫誌 2002; 30(3): 131 - 140）

關鍵詞：腦中風(stroke)，懷孕(pregnancy)，年輕女性(young female)

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