
Pregnancy with Stroke

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Abstract

Background: Pregnancy related stroke is a vital health problem that needs to be studied thoroughly in order to reach the point of well understand to the pathophysiological basis and the role of preventive measures in management.

Objectives: this study had been designed to find the frequency of stroke in relation to different periods of pregnancy and puerperium, to assess the effect of variable risk factors and their association with stroke is more frequent among pregnant ladies.

Methods: this is a cross sectional study that enrolled 30 pregnant patients who had stroke either or puerperium and being admitted to Al- Yarmouk. Baghdad and Al-Kadhemia Teaching Hospitals during the period from the 1st of January, 2001, to the 31st of December, 2002. All of the patients, who had been included in this study, had been subjected to detailed history, physical and neurological examinations and investigations.

Results: 63.3% of ladies included in this study acquired stroke during pregnancy, 80% of them had stroke during the third trimester and early weeks of puerperium. 2/3rd of the sample had ischemic stroke. Impaired consciousness was the commonest presenting symptom with a frequency of 50 % of the sample. 53.3% of the sample was hypertensive, while 36.7% of them had no significant past medical history. Oral contraceptive pills had been used by 50% of the sample, 2/3rd of those using oral contraceptive pills had ischemic stroke. 63.3% of the sample had cesarean delivery. 50% of the sample had history of abortion. 60% of who had positive history of recurrent abortion. Cerebellar signs were the least observed signs on the other hand; all of the patients included in this study had more dysfunction during the disease course.

Conclusions: this study revealed that most of stroke happened during the 3rd trimester and early weeks of puerperium .being hypertensive, whether pregnancy related or not, is the most important risk factor. In addition, other recognized risk factors included diabetes mellitus and use of oral contraceptive pills.

Keywords: stroke, pregnancy, puerperium, Iraq

Pregnancy with stroke

Introduction:

Currently, it is believed that stroke is one of the most important mortality as well as morbidity leading causes worldwide. stroke ranks as the third leading causes of death in the united states .it is now estimated that there are more than 700 000 incident stroke annually and 4.4 million stroke survivors in the United States only, with an economic burden of about 51 \$ billion according to the record of the American Heart Association in 1999. Annual incidence of stroke is variable from the geographic point of view; it is about 0.5-1.0 per 1000 population in the United States. While it is more than 1.5 per 1000 population in the western European countries and Japan, this variability could be attributed to the differences present between these communities particularly the ethnic origin and the dietary habits^[1-9]. Furthermore, not only geographic variability in the incidence of stroke had been observed but gender distribution had been found to be variable as well. Stroke is the second leading cause of death of women in Canada and the United States, with higher incidence of it in young women than in men between the ages of 15 and 30 to 35 years^[10-12]. Different factors can be considered to increase the risk of stroke among women in this age group. The use of oral contraceptive pills by this group population can increase stroke risk as part of its role in increasing the incidence of atherosclerotic cardiovascular diseases in general^[13-14]. In addition, certain stroke

associated diseases are particularly more frequent among young women, the best example of which is the anti-phospholipids syndrome that is regarded as an independent risk factor for stroke in young ladies^[15]. However, stroke associated with pregnancy has been long recognize and maybe partly responsible for this increased incidence. Stroke related to pregnancy is associated with significant morbidity and mortality. The American Maternal Mortality Collaborative reported cerebrovascular disease as the fifth cause of maternal deaths during 1980-1985^[16-17]. The incidence of pregnancy associated ischemic stroke is approximately 3-4 cases /100 000 per year^[18]. It had been observed from several studies that not only the risk of stroke or other circulatory diseases is increased during the period of pregnancy but risk of these diseases are increased substantially during late pregnancy and around the time of delivery^[19-20]. Several factors had been claimed to increase the risk of stroke among pregnant mothers, the most important of which are pregnancy related hypertension including pre-eclampsia and cesarean delivery^[21-22]. This study had been designed to find the frequency of stroke in relation to different periods of pregnancy and puerperium, to assess variable risk factors and their association with stroke, and to verify which type of stroke is more frequent among pregnant ladies

Patients & Methods:

This is a cross sectional study that enrolled 30 pregnant patients who had stroke either during pregnancy or puerperium and being admitted to Al-Yarmouk, Baghdad and Al-Kadhemia Teaching Hospitals during the period from the 1st of January, 2001 ,to the 31st of December, 2002. All of the patients, who had been included in this study, had been subjected to detailed history, physical and neurological examinations and investigations.

Results:

The study revealed that 19 out of 30 patients (63.3% of the sample) had acquired stroke during

pregnancy, and only 11 out of 30 patients (36.3%) had developed stroke during the puerperium.

Loss of consciousness was the main presenting symptom as indicated by this study (15 patients, 50% of the sample), in the other hand, no patients from those who had been enrolled by this study had presented with sensory symptoms. Table-1 shows patients distribution according to their presenting symptom.

Reviewing the past medical history of the patients included in this study revealed that 16 patients (53.3% of the sample) were hypertensive, while 11 patients (36.7% of the sample) showed negative medical history. Table-2 shows patients distribution according to their past medical history.

Table-1: Patients distribution according to the presenting symptoms

The presenting symptom		No.	%
1-	Headache	6	20%
2-	Fit	4	13.3%
3-	Loss of consciousness	15	50%
4-	Motor weakness	5	16.7%
5-	Sensory symptoms	0	0%
Total		30	100%

Table-2: Patients distribution according to their past medical history

The medical illness		No.	%
1-	Hypertension	16	53.3%
2-	Diabetes	2	6.7%
3-	Ischemic Heart Disease	1	3.3%
4-	Negative past medical history	11	36.7%
Total		30	100%

Oral contraceptive pills were the commonest way of contraception used by the patients who are involved in this study (15 patients, 50% of the sample), in contrast 10 patients (33.3% of the sample) didn't use any of contraception. Table-3

shows patients distribution according to the way of contraception.

Cesarean section was the commonest method of delivery among the pregnant patients who had been enrolled in this study, 19 patients (63.3% of the

sample) delivered by cesarean section, while only 11 patients (36.7% of the sample) delivered by normal vaginal delivery.

History of abortion had been detected in 15 patients (50% of the sample) six patients (40% of those with positive history for abortion, 20% of the total sample) showed history of abortion for once. In the other hand, the rest of those who gave history of abortion (9 patients, 60% of those with positive history for abortion, 30 % of the total

sample) had history of recurrent abortion i.e. history of 2 or more abortions.

Motor system dysfunction was the most frequent focal neurological deficit observed in all of the patients who had been included in this study (30 patients, 100% of the sample). Cerebellar signs were the least observed signs; they had been noticed in only 10 patients (33.3% of the sample). Table-4 shows the frequency of various neurological deficits among the patients included in this study.

Table-3: Patients distribution according to way of contraception

Way of contraception		No.	%
1-	Oral contraceptive pills	15	53.3%
2-	Intrauterine contraceptive device	5	6.7%
3-	Didn't use any method of contraception	10	3.3%
Total		30	100%

Table-4: Patients distribution according to the observed neurological

The neurological deficit		Normal findings		Abnormal findings		Total
		No.	%	No.	%	
1	Higher cerebral function	14	46.7%	16	53.3%	30
2	Cranial nerves	3	10%	27	90%	30
3	Motor signs	0	0	30	100%	30
4	Sensory signs	15	50%	15	50%	30
5	Cerebellar signs	20	66.7%	10	33.3%	30

Table-5 summarizes the results of the investigation done for the patients enrolled in this study.

This study revealed that ischemic stroke (infarction) had been diagnosed in 20 patients

(66.67% of the sample), while hemorrhagic stroke was found in 10 patients (33.33% of the sample), table-6 shows distribution according to the type cerebrovascular accident according to the possible underlying etiology.

Table-5: Patients distribution according to the results of investigations

The investigation	Normal results		Abnormal results	
	No.	%	No.	%
Cerebrospinal fluid analysis	20	66.67%	10	33.33%
Connective tissue screen	25	83.3%	5	16.7%
CT scan	0	0	30	100%
MRI	2	6.67%	28	93.33%
Magnetic resonance angiography (MRA)	29	96.67%	1	3.33%
Magnetic resonance venograph (MRV)	21	70.0%	9	30.0%
Electro-encephalogram (EEG)	24	80.0%	6	20.0%

**Table-6: Patients distribution according to the type of cerebrovascular accident
And the possible underlying etiology**

Possible etiology	Infarction		Hemorrhage	
	No.	%	No.	%
Anti-phospholipid antibodies	4	20%	1	10%
Atherosclerosis	3	15%	0	0
Disseminated intravascular Coagulopathy (DIC)	3	15%	0	0
Venous sinus thrombosis	7	35%	5	50%
No obvious cause	3	15%	4	40%
Total	20	100%	10	100%

Discussion:

The problem of pregnancy associated stroke stimulates many research workers to study the epidemiological aspect of this vital health problem, in order to reach a point of well understand for its different risk factors, particularly when they take into their consideration the importance of primary prevention of stroke in general and pregnancy associated stroke in the term of the medical as well as economic benefits. The other important factor that stimulates the researchers is the inconclusive evidence about what was believes that stroke is significantly more frequent during pregnancy yielding a stimulating controversy about this epidemiological phenomenon [23]. Furthermore, recently there are evidences that maternal death resulting directly from obstetric causes are decreasing in frequency, while stroke as well as other non-obstetric causes of maternal mortality has become of increasing importance [23].

This study revealed that essential hypertension as well as pregnancy related hypertension including pre-eclampsia is the main possible risk factor for stroke among the patients enrolled in this study (16 patients, 53.3% of the sample).this coincide with the results of many other similar studies, with higher frequency observed in the sample studied in this study. The Baltimore-Washington Cooperative Young Stroke Study revealed a frequency of hypertension as a risk for stroke in 41-50% depending on whether the hypertension was related to pregnancy or not, respectively [25]. Sharshar et al report for the French Stroke in Pregnancy Study Group also complements the results of our study (hypertension observed in 47% of cases included in the French study) [26]. These findings suggest a similar important role for hypertension in the pathogenesis of stroke during pregnancy and puerperium similar to that role in the general non-pregnant population [27]. This higher incidence of stroke in those patients with pre-eclampsia increased the long term risk of death by 1.2 fold higher than women who did not have pre-eclampsia [28].

Good percentage of the patients included in this study had negative past medical history (11 patients, 36.7% of the sample). It is essential for well practiced physicians to search for any possible hidden risk factors, the most important of which are inherited and acquired thrombophilia syndromes. Thus pregnant women with focal neurological symptoms should evaluated for thrombophilia [22, 29].

Recent epidemiological study suggests that the relative risk of stroke rises to 8.7 during the post-partum period. In that same population-based report the relative risk of stroke during gestation was found to be 0.7 [25]. In addition, the post-partum period, not the pregnancy itself, is associated with an increased risk of recurrent stroke [30]. In this study only 36% of the sample (11 patients) had post-partum stroke, in most of whom cesarean section was the method of their delivery. Cesarean section is one of the most important risk factors that increase the probability of pregnancy associated stroke, the other important risk factors is the hypertensive disease of pregnancy including pre-eclampsia [20,22].

Cerebral venous thrombosis has been traditionally associated with pregnancy, especially during the puerperium.

The condition is seen throughout the gestation but most commonly is identified during the second to third week post-partum [31, 33]. This study revealed that 12 patients (40% of the sample) had cerebral venous thrombosis, 10 patients from the 12 had their stroke due to cerebral venous thrombosis during the puerperium. This phenomenon could be related to the fact that the period of puerperium is associated with higher incidence of cerebral venous thrombosis, associated risk factors mostly dehydration and infection.

The use of oral contraceptive pills particularly traditional pills are considered as an important risk factor for accelerated atherosclerosis with all of its related diseases like myocardial infarction and stroke. This effect most pronounced in young adulthood including the childbearing age [34, 35]. 50% of pregnant ladies enrolled in this study had used oral contraceptive pills as a method for contraception. In addition, it is important to realize that the risk of ischemic events in patients using oral contraceptives is directly related to estrogen does, particularly in women who have other risk factors like diabetes, hypertension or being older than 35 year old. Current concepts of evidence based medicine showed that low does oral contraceptives are safer with high degree of efficacy [36], but even these low do preparations carry an increased risk for stroke in current users [37].

Antiphospholipid syndrome is considered as an independent factor for stroke in young women. The frequency of positive anticardiolipin antibody or lupus anticoagulant among young females with stroke is about 42%. However, not

all studies gave such an association^[38]. This study revealed that only 16.7% of the sample had positive Antiphospholipid antibodies (20% of infarction cases, 10% of hemorrhagic stroke patients).

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