

ORIGINAL ARTICLE

Pathological risk factors related to mother during pregnancy that lead to epilepsy in children

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Abstract

Epilepsy is a most common neurological disorder related to an abnormal electrical activity in the brain. The current study aims to identify the risk factors associated with epilepsy among children related to mother.

Methodology: A descriptive case-control study was adopted to achieve the stated objectives. An analytic case-control study, Non-Probability (a Purposive Sample) of (100) women of Children with epilepsy as case group, and (100) women of healthy children without epilepsy as control group. Reliability of instrument is determined using Cronbach Alpha, and the Validity of questionnaires were determined through a panel of experts. The data are analyzed using the descriptive and inferential statistics.

Results: The study has shown that residency, mother exposure to domestic violence during pregnancy, mother exposure to accident during pregnancy, and prolonged labor are significantly associated with epilepsy occurrence (the Odds ratio more than 1), so these factors are more likely to be risk factors associated with epilepsy occurrence.

Conclusion: The study concludes that among the risk factors associated with epilepsy for the present study were the residency, exposure to domestic violence, exposure to accident (car accident, trauma, fall) and prolonged labor.

KEY WORDS

Risk factor, Epilepsy, neurological disorder, children



INTRODUCTION

Epilepsy is a most common neurological disorder related to an abnormal electrical activity in the brain (1) . The epilepsy prevalence approximately 2.8 to 44 per 1000 person (2) . The higher incidence/prevalence relates to more acquired brain disease through high rates of meningitis, encephalitis, head injury, etc. In Arab countries, the estimated prevalence of epilepsy in children ranges from 3.6 to 10.5/1000, depending on the age brackets subject (3) . The incidence of epilepsy in Arab World was 174 for each 100,000 people in 2001 and about 724,500 individual with epilepsy in the Arab countries (4) According to Iraqi Ministry of Health Statistic in Baghdad, epilepsy is an increasingly health problem and the number of patients is raised in the last years up to risen average in 2011. In the same year the number of patients who admitted to Iraqi Hospitals in 1991 were 898 and this number was increased to 4409 in 2011. The prevalence of epilepsy in Baghdad city was 8.2/1000 (5) . The researcher selected risk factors that were considered as contributors to the problem of epilepsy because the Iraqi community has been suffering from along and devastating war culminating in the 1980- 2017, outbreak of violence and embargo so the number of epilepsy cases. The current study aims to identify the risk factors associated with epilepsy among children related to mother.

MATERIALS & METHODS

Design of the Study: An Analytic case-control study was conducted to identify the risk factors associated with epilepsy among children that related to mother. A Non-Probability (a Purposive Sample) of (100) women of Children with epilepsy as case group, and (100) women of healthy children without epilepsy as control group. The study instrument is constructed by the researcher to assess the risk factors of epilepsy related to mother. The complete instrument of study consists of (3) parts: Part 1 Demographic Characteristics consists of Demographic Data of Mother (socioeconomic status of family ,level of education, occupational status, part 2 (11) items: Mother age at marriage, Para, Abortion, Complications during Pregnancy, Intake of drugs during pregnancy, Interval between pregnancies, exposure to domestic violence, exposure to accident (car accident, trauma, fall), eclampsia, diabetes mellitus and prolonged labor.

Statistical Analysis: The following statistical data analysis approaches used in order to analyze the data of the study under application of the statistical package (SPSS) ver. (19) and the Microsoft excel (2010). Descriptive data analysis includes tables (Frequencies, and Percentages) and Statistical figure (Bar chart & pie chart) and Inferential Data Analysis includes Chi-square test is used for testing the difference between study and control group. Internal consistency/Cronbach Alpha to determine the reliability of the study instrument and odds ratio for risk factors of epilepsy.

RESULTS

Table (1) shows that Mother Levels of education are Primary School Graduated (33%) of study group and (25%) control group. Mother Occupational status of study group (97%) and (75%) control group are Housewife. Residence (63%) study group and (96%) control group are urban. Socioeconomic status of family, the study group (52%) and (51%) control group are Sufficient to what limits. There is a high significant association between the Epilepsy occurrence and the socioeconomic status, mother level of education , mother occupational status, and residence .

Table (2) shows that the majority of study and control group: Mother Age at marriage of study group high in (20-28) years are (48%), while (60%) of control group in(11-19) years. parity are (4-6) Para (53%) of study group and (56%) of control group. number of abortion are one abortion (55.9%) for study group and (81.8%) for control group. Complication during pregnancy (69%) of study group are Anemia while (61%) of control group have no complication. Both study and control group intake drugs during pregnancy (73%) study group and (79%) control group. anti-anemic drugs intake are (72%) of study group and (76%) of control group. Interval between pregnancies are less than 2 years in (58%)of study group while (54%) equal or more than 2 years for control group. (85%) of study group not exposure to domestic violence, (94%) of control group also not exposure to domestic violence during pregnancy. Exposure to accident such as(car accident, trauma, fall) are (87%) of study group not Exposure to accident and (98%) of control group also not Exposure to accident. (90%) study group without eclampsia and (100%) control group without eclampsia during pregnancy. no Diabetes mellitus in (97%) study group and (99%) of control group. the majority of study group not exposed to prolonged labor (83%) and (98%) of control group also not exposed to prolonged labor.

There is a high significant association between epilepsy occurrence and Exposure to accident such as(car accident, trauma, fall), eclampsia, and prolonged labor. Significant with Mother age at marriage, parity, and Exposure to domestic violence. Non-significant with other reproductive characteristics.

Table (3) shows the important factors of association in occurrence of epilepsy. Regarding to mother level of education (educated, uneducated), mother age at marriage (early age, suitable age), number of parity(low, high) are not significantly associated with epilepsy occurrence (the Odds ratio less than 1), so these factors less likely to be risk factors for epilepsy. Concerning the residency, mother exposure to domestic violence during pregnancy, mother exposure to accident during pregnancy, and prolonged labor are significantly associated with epilepsy occurrence (the Odds ratio more than 1), so these factors are more likely to be risk factors associated with epilepsy occurrence.

Demographic data	Rating and intervals	Study group		Control group		Chi-Square	P-value (Sig.)
		Freq.	%	Freq.	%		
Mother Levels of education	Illiterate	21	21	8	8	21.714	0.001 (HS)
	Read and Write	21	21	20	20		
	Primary School Graduated	33	33	25	25		
	Intermediate or Secondary School Graduated	18	18	18	18		
	Institute or university Graduated	7	7	22	22		
Post graduate	0	0	7	7			
Occupational status	Employment	3	3	25	25	20.100	0.0001 (HS)
	Housewife	97	97	75	75		
Residence	Rural	37	37	4	4	33.410	0.0001 (HS)
	Urban	63	63	96	96		
Socioeconomic status of family	sufficient	8	8	36	36	31.583	0.0001 (HS)
	Sufficient to what limits	52	52	51	51		
	Insufficient	40	40	13	13		

Table (1) Demographic Characteristics of Study Sample and the association with epilepsy occurrence

Risk factors	odd ratio value	95% Confidence Interval	
		Lower	Upper
Mother educational level	0.376	0.206	0.684
Mother occupational status	0.093	0.027	0.319
Residency	14.095	4.789	41.482
Mother age at marriage	0.545	0.311	0.956
Number of parity	0.812	0.462	1.430
Mother exposure to domestic violence	2.765	1.026	7.449
Mother exposure to accident	7.322	1.607	33.358
Prolonged labor	10.036	2.253	44.712

Table (3): Odd ratio for the risk factors associated with epilepsy

Items	Rating and intervals	Study		Control		Chi-Square	P-value (Sig.)
		Freq.	%	Freq.	%		
Mother Age at marriage/ years	11-19	45	45	60	60	8.316	0.04 (S)
	20-28	48	48	39	39		
	29and more	7	7	1	1		
Para	<= 3	38	38	43	43	6.876	0.032 (S)
	4 - 6	53	53	56	56		
	7+	9	9.0	1	1		
Abortion	1	19	55.9	27	81.8	6.591	0.086 (NS)
	2	8	23.5	5	15.2		
	3	7	20.6	1	3.0		
Complication during pregnancy	Pregnancy induced hypertension	19	19	3	3	0.413	0.508 (NS)
	Vaginal bleeding	9	9	2	2		
	Hyperemesis gravidarum	4	4	0	0		
	Anemia	69	69	36	36		
	No complication	29	29	61	61		
Intake of drugs during pregnancy	Yes	73	73	79	79	0.987	0.321 (NS)
	No	27	27	21	21		
Type of drugs	Antianemic	72	72	76	76	0.416	0.519 (NS)
	Antibiotic	8	8	3	3		
	progestogen	10	10	4	4		
	Antihypertensive	17	17	3	3		
	Antiemetic	4	4	0	0		
	Antiepileptic	2	2	0	0		
	Antipyretic	7	7	2	2		
Interval between pregnancies	2years<	58	58	46	46	2.885	0.089 (NS)
	≤ 2years	42	42	54	54		
Exposure to domestic violence	Yes	15	15	6	6	4.31	0.038 (S)
	No	85	85	94	94		
Exposure to accident such as(car accident, trauma, fall)	Yes	13	13	2	2	8.721	0.003 (HS)
	No	87	87	98	98		
Eclampsia	Yes	10	10	0	0	10.526	0.001 (HS)
	No	90	90	100	100		
Diabetes mellitus	Yes	3	3	1	1	1.020	0.312 (NS)
	No	97	97	99	99		
Prolonged labor	Yes	17	17	2	2	13.085	0.0001 (HS)
	No	83	83	98	98		

Table (2) Factors related to mother (pre and perinatal history) and association with epilepsy occurrence

DISCUSSION

Table (1) shows that the The majority of study and control group mother occupational status are housewife. This result agrees with Kolahi, et al. (6) in their study found the majority of mothers who participant in the study were unemployed (housewife). About mother levels of education, the highest percentage was primary school graduated. This might be related

to the fact that many Iraqis were people unable to complete their studies due to many causes such as poverty, insecure cities and schools...etc. These results match with the result of a study conducted by Canpolat et al., , where the majority of fathers and mothers were primary school graduated (2). Concerning the result in table (3), the present study shows that there is a non-significant association between the mother level of education (OR= 0.537) and epilepsy.

This result is in agreement with the result of some studies which found that was no relationship between childhood epilepsy and parent educational level. It is in disagreement with the result of Canpolat et al. which found that higher prevalence of epilepsy was in families with moderate socioeconomic status, parent with low education levels and this study revealed a significant relationship between maternal education level and epilepsy (2). In addition, the socioeconomic status for family in the present study is sufficient to what limits for both the study and control groups. Most patients comes to the general hospital with low or moderate socioeconomic status. This result is supported by Canpolat et al., which found that the high percentage of study participants are with moderate socioeconomic status (2). Relative to the residence the majority of both groups are living in urban residential area. This result matches with the result of Asadi-poooya and Hojabri (7) in their study found that majority of participants lives in urban area. This may related to the big hospitals and specialized centers existed in the urban area so that the majority of patients visiting the hospitals from urban residential area. There is a high significant association between residence and epilepsy. This result in agreement with Asadi-poooya and Hojabri, 2005, in their study found that from the risk factors of epilepsy was the residence especially in rural areas (7). About the residency (OR= 14.095) there is a significant association with epilepsy. Residency is more likely to be risk factors associated with epilepsy (Rural area). This result matched with result of Asadi-poooya and Hojabri, 2005 in their study the rural residential area associated with epilepsy (OR= 2.44). Concerning to table (4.2) mother age at marriage is significantly association with epilepsy (7). This result in agreement with the result of study conducted by Glass, et al. (8), in those study the maternal age significantly associated with the developing of epilepsy. In disagreement with the study of Asadi-poooya and Hojabri, (7) in their study there is No significant relationship between epilepsy and maternal age. In the current study, mother age at marriage (OR= 0.545) is not statistically significant associated with epilepsy. This result is in agreement with the study of Asadi-poooya and Hojabri, 2005, where there is a non-significant relationship between epilepsy and maternal age. There is a non-significant association between the epilepsy and the number of parity (OR= 0.812). This result agrees with the result of Attumalil et al. (9), in their study they who found a non-significant relationship between parity and epilepsy. There is a significant association between epilepsy and mother during pregnancy exposure to domestic violence (OR= 2.765). According to Huth- Bocks, e t al. (10), in their study reported about domestic violence as a common social problem especially against female. Which leading to many emotional, and behavioral problems for pregnant women and can lead to different health problems and complications for both mothers and her fetus.

There is a high significant association between the epilepsy and the mother exposure to accident during pregnancy such as(car accident, trauma, fall) (OR= 7.322). This might be due to the risk of pregnant women exposure to accident, trauma or fall may increase the risk for fetus also and can cause many complications for mother and fetus. Regarding to eclampsia there is a high significant association with epilepsy. This result matches with the result of Whitehead et al., (11) they found that the eclampsia was significantly associated with epilepsy occurrence in childhood, and the fetal of mother exposure to eclampsia considered with a high risk for epilepsy development . Also, there is a high significant association between the epilepsy and the prolonged labor (OR= 10.036). This increase the chance of epilepsy occurrence in the baby . This result agrees with Mung' ala- Odera et al. (12), they found there is a significant association between birth difficulties and epilepsy occurrence. And also supported by Kanno et al. in their study found that the occurrence of prolonged labor affects on the developing of the focal epilepsy (13).The limitation of the current study is that small number of subjects has been included in addition to the subjective method in data collection.

CONCLUSION

It was concluded that among the risk factors associated with epilepsy for the present study were the residency, exposure to domestic violence, exposure to accident (car accident, trauma, fall) and prolonged labor.

Conflict of Interest: None

Ethical consideration: from ethical committee in the University of Kufa.

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