

ORIGINAL ARTICLE

Factors Associated with Parental Refusal for Lumbar Puncture Among Children and Adolescent: A Cross Sectional Survey at a Tertiary Care Hospital

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ABSTRACT

Introduction: The lumbar puncture is frequently used in medical facilities to collect data on the cerebrospinal fluid (CSF). The method aids in the diagnosis of conditions affecting the spine and brain's central nervous system. However, in routine practice out of the many challenges posed by the parents due to lack of education, denial of consent for this procedure is a great challenge at clinical settings.

Objectives: To determine the association of various factors with parental refusal for lumbar puncture among pediatric population (age from 1 month to 18 years).

Materials and Methods: A descriptive, cross-sectional study was carried out at the department of pediatrics and child health and department of Emergency at Aga Khan University Hospital, Karachi from June 2017 to May 2018. A total of 178 children 1 month to 18 years old admitted with febrile fits, suspected meningitis or encephalitis who were advised for lumbar puncture were included.

Results: In the present study, the age of the patients ranged from 1 month to 18 year. Majority of the patients 153 (85.39%) were between 1 month to 6 years of age. There were 115 (64.61%) male patients.. Fever and fits was the most frequent indication (n=151, 84.83%) for lumbar puncture in the study. Most of the parents were educated, 68.54% of mothers and 65.17% fathers had graduate level of education, and parents of 47 (26.4%) patients refused for lumbar puncture.

Conclusion: This study concluded that frequency of parental refusal for lumbar puncture was 26.4% and the most common reason for refusal was fear of complications.

Keywords: lumbar puncture, febrile seizures, parental refusal.

INTRODUCTION

The lumbar puncture (LP), also called a spinal tap, involves inserting a needle into the spinal canal to collect cerebrospinal fluid (CSF) for diagnostic testing. The method aids in the diagnosis of conditions affecting the spine and brain's central nervous system. Although post-dural puncture headache is a common adverse effect, the operation is thought to be safe [1]. Heinrich Quincke, a German doctor, invented the lumbar puncture in 1891[2]. Usually, local anaesthetic is used during the treatment, and a sterile approach is used. The fluid in the subarachnoid space is accessed with a hypodermic needle. After that, a fluid sample is sent for biochemical, microbiological, and cytological examination. The department of health care frequently conducts lumbar punctures to acquire information regarding the cerebrospinal fluid (CSF) [3-5].

The most prevalent indication for a lumbar puncture, which occurs in 2-5% of children between the ages of 4 months and 5 years, is fever-related convulsions [6]. In order to lower elevated intracranial pressure in children with tuberculous meningitis, Quincke performed the first lumbar puncture in 1891. Additionally, 25–30% of kids with bacterial meningitis experience seizures. The researchers advised that all kids admitted with their first febrile seizure undergo LP[7-8]. Despite the lack of clinical symptoms, several studies on children less than 12 months advise performing lumbar punctures. Lumbar puncture is a recommendation anytime there is a suspicion of a CNS infection, but the decision in this case is based on the doctor's personal experience[9-13].

MATERIALS AND METHODS

A descriptive, cross-sectional study was carried out at the department of pediatrics and child health and department of Emergency at Aga Khan University Hospital, Karachi. A total of 178 children 1 month to 18 years old admitted with febrile fits, suspected meningitis or encephalitis who were advised for lumbar puncture were included.

LP required as therapeutic or diagnostic maneuver and contraindications to LP were excluded. Data collection comprised of demographic details of child and parents (age, gender, weight,

relation with child (mother or father), parental education, reason of refusal, indication for LP were the independent variables in the study while the refusal for LP was dependent variable in the study. Data was entered and analyzed using SPSS version 23. Categorical variables were reported using percentages and chi square test of association was employed with p-value less than 5%.

RESULTS

In the present study, the age of the patients ranged from 1 month to 18 year. Majority of the patients 153 (85.39%) were between 1 month to 6 years of age. Out of the 178 patients, 115 (64.61%) were male and 63 (35.39%) were females with male to female ratio of 1.83:1. Nearly 1/5th of patients (n=36, 20.22%) weighed more than 20kg. Fever and fits was the most frequent indication (n=151, 84.83%) for lumbar puncture in the study. Most of the parents were educated. Only around 1% of parents were uneducated while 68.54% of mothers and 65.17% fathers had graduate level of education (Table I).

Table-1: Distribution of Patients According to Age, Weight, Gender, Indications and Parental Education (n=178).

Age, Weight and Gender		No. (n=178)	%
Age	1m to 8y	153	85.39
	9y to 16 y	25	14.61
Weight	≤20 kg	142	79.78
	>20 kg	36	20.22
Gender	Male	115	64.61
	Female	63	35.39
Indications	Fever with Fits	151	84.83
	Drowsiness with Lethargy	6	3.37
	Irritability	11	6.18
	Sick looking	9	5.06
	Signs of Meningeal Irritation on Examination.	1	0.56
Mother's	Un educated	2	1.12

Education			
	Primary	10	5.62
	Secondary	6	3.37
	Intermediate	38	16.85
	Graduation	122	68.54
Father's Education	Un educated	2	1.12
	Primary	18	10.11
	Secondary	6	3.37
	Intermediate	36	20.22
	Graduation	116	65.17

We observed that parents of 47 (26.4%) patients refused for lumbar puncture Fig. 1. The most common reason for the refusal was the fear of complications Table II.

We employed the Chi-Square Test of Association to determine the strength of the association between various factors with the parental refusal for lumbar puncture; it was evident that more educated parents denied the consent for the lumbar puncture; however, p-value findings revealed that none of the factors showed significant association Table III.

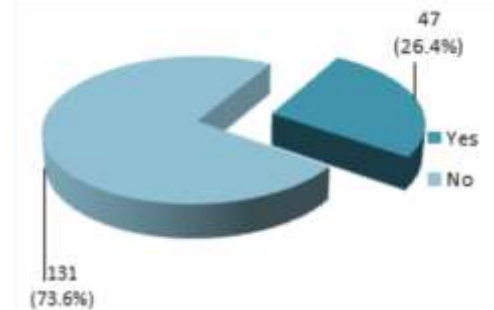


Figure-1: Frequency of Parental Refusal for Lumbar Puncture in Symptomatic Children (n=178).

Table 2: Frequency of Reasons for refusal of lumbar puncture among pediatric population (n=47)

Reasons	Frequency	Percentage
Parents with Fear of complications of LP	24	51.06
Prefer relative's opinion for consent	7	14.89
Prefer family physician's opinion before consent	3	6.38
Consider that the risk of escaping LP outweighs the risk of its complications	13	27.66

Table 3: Chi Square Association of Various Determinants Affecting The Refusal of Parents for the Lumbar Puncture

	Determinants	No.	%	Refusal		p-value
				Yes	No	
Age	1 month to 8 years	153	85.39	39	114	0.494
	9 to 16 years	25	14.61	8	17	
Gender	Male	115	64.61	32	83	0.561
	Female	63	35.39	15	48	
Indications	Fever with fits	151	84.83	40	111	0.51
	Drowsiness with lethargy	6	3.37	0	6	
	Irritability	11	6.18	4	7	
	Sick looking	9	5.06	3	6	
	Signs of Meningeal Irritation	1	0.56	0	1	
Mother's Education	Un educated	2	1.12	0	2	0.204
	Primary	10	5.62	1	9	
	Secondary	6	3.37	1	5	
	Intermediate	38	16.85	15	23	
	Graduation	122	68.54	30	92	
Father's Education	Un educated	2	1.12	0	2	0.545
	Primary	18	10.11	4	14	
	Secondary	6	3.37	2	4	
	Intermediate	36	20.22	13	23	
	Graduation	116	65.17	28	88	

DISCUSSION

A key goal of the global health plan is early disease detection and treatment. Infants and children frequently contract viral and bacterial infections, which can move to the central nervous system (CNS) and result in primary or secondary infection in central nervous system. Regarding the cerebrospinal fluid and the advantages of lumbar puncture, one of the diagnostic procedures (LP) [14] The parent's denial of LP can put the doctor in a difficult situation when the child is exhibiting apparent febrile convulsions and the doctor suspects meningitis. Without a cerebrospinal fluid sample, a meningitis diagnosis cannot be determined with certainty [14]

In the present study, frequency of parental refusal for lumbar puncture in symptomatic children is shown in 47 (26.4%) patients. In line with our findings, a study conducted at Mulago Hospital in Kampala reported that the refusal of a diagnostic LP was 25% [16].

In our study, frequency of reasons for refusal of lumbar puncture was observed as; fear of complications of LP in 24 (51.06%), preferring opinion of a relative before consenting among 07 (14.89%), preferring opinion of family physician before consenting among 03 (6.38%), and consider that the risk of

escaping LP outweighs the risk of its complications among 13 (27.66%) patients.

The frequency of parents refusing to grant consent for LP and some of their underlying causes have been published in a few research, which are similar to the criteria considered in our study [14,15]. Patients who rejected LP were much more likely to leave the hospital on their own. They would be at risk because this could further delay the meningitis diagnosis and treatment [14]

Similar to our findings, a research by Wong et al. in 2010 observed the main reasons for refusal of LP by parents was related to fear of paralysis in 48% and fear for mental retardation in 6%; 16% were influenced by the recommendations of relatives and friends [17]. However, higher percentage of the parents having the fear of complications was reported in a study conducted in a teaching hospital in Ireland [11].

Similarly, Deng et al. studied the parental views on LP in their children with febrile convulsions, and the authors reported that the main reasons for refusal were mental retardation, child death, painfulness, weakened kidneys and fear of paralysis [15]

Attitudes, beliefs, and views of parents who refuse to give their child's lumbar puncture consent at the Tawam and Al Ain hospital were examined in a qualitative study [19] Seven (29%)

families were unaware of the uses for LP, and 3 believed that LP may be used therapeutically. The three main themes that emerged were mistrust of the motivations behind the request for consent, feeling that LP was unnecessary, and fear of problems, which was expressed by 18 (75%). 80% of the reasons for refusal were based on fear of paralysis and the belief that LP is not necessary. Ten (42%) of the families said they would only agree if the child appeared ill or deteriorated, while 11 (46%) said that nothing would have convinced them to comply [19].

Another study that questioned parents' opinions on their children's LP revealed that most of the time they disagree with it or oppose it out of concern about potential paralysis, misunderstanding caused by incorrect popular advice, worry about losing the infant during LP, and discomfort of the LP process [16]. A study on parents' worry for their kids' LP revealed that 100% of those parents tend to stay with them during LP and 25% of parents who weren't there for the last LP also tend to stick by their kids if LP happens again [18]. In a research conducted in the United Arab Emirates, a country where men predominated, 66% of the time, the choice to withhold consent was taken jointly by the parents [19]. The father, who is seen as the decision-maker in this community, made 12% of the refusals as well [19].

CONCLUSION

This study has revealed that frequency of parental refusal for lumbar puncture in symptomatic children was 26.4% and the most common reason for refusal was fear of complications. There is dire need of the hour to channelize mass awareness programs to enhance the knowledge of general public regarding therapeutic and diagnostic procedures among children so that early diagnosis and management should run in order to reduce the morbidity and mortality.

Conflict of Interest: Authors declared no any conflict of interest in this study

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