

Evaluation of Parental Attitudes toward Lumbar Puncture in their Children

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Abstract

Introduction:

Sometimes physicians need to assess some markers on selected children's cerebrospinal fluid according to lumbar puncture (LP). Although immediate diagnosis and treatment especially for meningitis is necessary, but just at this moment, due to some incorrect beliefs in society, some parents may not allow physician to LP. The reality is that most of these people, if they have enough information about this issue, will not interfere. This study aimed to assess the knowledge and attitudes of parents toward this subject.

Materials and Method:

Through a cross-sectional study we evaluated 91 parents of children, who must have undergone LP as physician's decision, selected during 18 months using purposive sampling. The data collection tool was a questionnaire that consisted of two sections of the child and the parents' knowledge and attitudes. Scientific validity of the questionnaire was confirmed by content validity. To achieve the objectives, SPSS 15 and descriptive statistics and chi-square test were used.

Results:

61 parents (67%) mentioned fear of some side effects as the main reason of their children's LP discontent. The most important cause of fear was low back pain according to 50 (54.9%) parents' view. 70 parents (76.9%) had some satisfaction after performing LP. There was a statistically significant difference between the proportion of satisfied parents and non-satisfied ones ($p < 0.001$). Average score of parental satisfaction for LP was (7.2 ± 3.287) .

Conclusions:

It seems that improvement of parents' information about LP process and its benefits by health care group, may influence on their belief and cooperation during diagnostic tests.

Keywords:

Attitude, Children, Lumbar puncture, Parental.

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Introduction

One of the indicators of child health is public health and reducing the incidence, early diagnosis and treatment of disease is an important objective of the global health plans.

One of common diseases in infants and children can be viral or bacterial infections, and noted that it can spread to the central nervous system (CNS) and causes primary or secondary infection in nervous tissue. So one of diagnostic testing is on cerebrospinal fluid. Seizures associated with fever is a common finding occurred in 2-5% of children between aged 4 months to 5 years old (1-3). Seizure also occurs in 25-30% of children with bacterial meningitis (4). Various investigations have been reported in patients apart from febrile seizures, other findings were not in favor of meningitis and after spinal puncture (Lumbar puncture: LP) meningitis have been confirmed. Therefore, the researchers recommended that all children admitted with febrile seizure should undergo LP (5,6). According to some studies in children aged less than 12 months suggest to perform LP, even despite the absence of clinical symptoms (7). However, the decision in this case is related to the physician's personal experience and whenever there is a suspicion of a CNS infection, lumbar puncture should be performed (8).

In a study in a medical center during (October 2009 to December 2010), 157 children under the age of 18 months, who were hospitalized due to febrile seizures for the first time, lumbar puncture in 40% of cases (63 patients) were performed. Meningitis/ encephalitis had been detected in eight children: three cases of viral meningitis, three cases of bacterial meningitis (*Streptococcus pneumoniae*), and two cases of viral encephalitis other than herpes. Because the symptoms of meningitis are not clear under the age of 18 months, so lumbar puncture (LP) is widely recommended in these infants with

febrile seizures. But retrospective studies have challenged this age criteria (9).

Due to the LP is more invasive and different than other routine tests in children, Usually parents may disagree with LP due to their anxiety that even disrupts the process of diagnosis and treatment. Although this problem is almost common, but little study has been done about it, especially in our country.

According to the little findings in this context and it's importance to child health, the goal of this study is to determine parental attitudes about LP in their children.

Materials and Methods

This study was a cross-sectional study that approved by the Research Council of Northern Khorasan University of Medical Sciences in (2012-2013). Sampling was done during the period of 18 months at Imam Reza Hospital in Bojnurd.

Research tool was a researcher-made questionnaire which was confirmed by content validity and internal consistency (the correlation value ($r=0.85$) reliability).

According to attending physician's diagnosis and decision for LP, demographic data and information about the child's illness was recorded by a nurse. Also requested of parental to express their satisfaction with the LP as a number from zero to ten.

Data were coded and analyzed by descriptive and analytic [one-way analysis of variance (ANOVA), chi-square test] statistics and confidence coefficient 95% by SPSS-15. ($P<0.05$) was considered significant.

Results

Our study was performed within eighteen months on the 91 children taking CSF was prescribed by their doctor. In this study, 39 children (42.9%) were female and 52 children (57.1%) were male. The mean age was 19 ± 0.140 months. Children admitted to hospital due to diarrhea, vomiting, loss of consciousness, pneumonia and

septicemia (Table.1) and only for 3 children (3.3%) had been undergone LP in the past time. The mean age of the mothers were 9.5+4.270, and 87 mothers (95.6%) were housewife, 4 mothers (4.4%) were self-employed and employees. Fathers mean ages was 32+ 1.732, and 65 fathers (71.4%) were self-employed, 9 fathers (9.9%) were employees, 16 fathers (17.9%) were workers and one father (1.1%) was unemployed. 53 children (58.2%) living in urban areas and 38 children (41.8 %) were from rural areas.

Table 1: Distribution of children 's referral causes.

Referral causes	Number	Percent
fever	72	79.1
Nausea , vomiting	9	9.9
Loss of consciousness	2	2.2
pneumonia	4	4.4
septicemia	4	4.4

Family members of 36 children (39.6%) were 3 people, this rate was 4people in 30 children (33%), 23 patients (25.3%) had 5 people in their family and 2 children (2.2%) have a family with 6 and 7 people. Levels of parental education ranged from illiterate to university educated (Table 2).

Table 2: Frequency of Educational Level in Parents of Children.

Educational level		Number	Percent
Illiterate	Father	3	3.3
	Mother	8	8.8
Primary	Father	39	42.9
	Mother	42	46.2
Guidance School	Father	18	19.8
	Mother	13	14.3
High School	Father	21	23.1
	Mother	19	20.9
University	Father	10	11
	Mother	9	9.9

Most birth of children were, respectively, the first 39 children (42.9%), the second of 32 children (35.2%), the third of 18

children (19.8%) and 2 children (2.2%) of the fourth and fifth children were.

53 (58.2%) of parents had received necessary information about the LP previously. That was statistically significant difference (P=0.04) between parents proportion who had received the necessary information and those who had not.

74 (81.3%) of parents received information about LP from the doctor and 17 patients (18.7%) was notified by nurses. Three parents (3.3%) experienced LP in the other their children previously, and 2 parents (2.2%) had some experience about LP in their friends and relatives.

According to explain about LP process by health care group, 70 parents (76.9%) had some satisfaction after performing LP .There was statistically significant difference between proportion of satisfied parents and non-satisfied ones (P<0.001).

There were various reasons for parental discontent to perform LP, and the most was fear of side effects (Table 3).

Table 3: Frequency of Reasons Parents do not Consent, LP

Reasons	Number	Percent
Little information	23	25.3
Fear of side effects	61	67.1
Unsuccessful experience	4	4.4
Lack of medical facilities	3	3.3

During asking parent's view about LP importance for their children's diagnosis, we found that 12 parents (13.2%) express this importance is very so much. 27 parents (29.7%) believed to much importance.17ones (18.7%) believed to some extent, 4 parents (4.4%) told slightly, 7people (7.7%) expressed that this method has no effect, and 24 ones (26.4%) were unaware of LP necessity on their child's diagnosis.

During asking parent's view about LP importance for their children's diagnosis, we found that 13 parents (14.3%) express this

importance is very so much. 26 parents (6.28%) believed to much importance. 18 ones (19.8%) believed to some extent, 2 parents (2.2%) told slightly, 7 people (7.7%) expressed that this method has no effect, and 25 ones (27.5%) were unaware of LP necessity on their child's diagnosis.

It should be noted that in 4 cases's family members had undergone LP in the past. 5 cases's family members had history of seizures and disability. 3 children (3/3%) had congenital disorders one of them as a preterm twin had speech impairment, mental problems, CHD (congenital heart disease). 5 children (5.5%) had pneumonia, kidney stones and seizure.

Average score parental satisfaction for LP on a scale of ten points equals 7.2 + 3.221. Also, T test showed that the average parental satisfaction score in whom were aware of the need to LP for diagnosis and treatment of disease, were more than ones who did not informed, so there was a significant difference (P<0.001). After the necessary follow-up, 11 children with meningitis (12.1%) were confirmed (Table 4).

Table 4: Frequency of the exactly diagnosis in children in the study

Reasons	Number	Percent
Meningitis	11	12.1
Febrile seizures	36	39.6
Epilepsy	4	4.4
Seizures and fever followed by diarrhea	35	38.4
Septicemia	4	4.4
Seizures following vaccination	1	1.1

Discussion

In this study, the main reason for LP dissatisfaction in 50 parents (54.9%) was fear of possible complications such as paralysis and back pain. Narchi study in 2012 on 24 families with discontent to LP, showed that 7 people were unfamiliar with lumbar puncture, 18 patients were fear of side effects (14 ones for paralysis and 4 cases for pain), 5 patients felt that lumbar

puncture is not necessary and one of them had scoliosis (10).

Study by Wong and et al in 2010 showed the main reasons for dissatisfaction LP by 48% of parents were fear paralysis, 6% had fear for mental retardation, 16 % were influenced by relatives and friends recommendations (11).

Deng's study in 1994 on parental view about LP in their children with febrile convulsion reported that the main discontent reasons were fear of paralysis, mental retardation, child death, painfulness, weakened kidneys, which is consistent with some our findings (12).

In a study asked parent's belief about their children's LP showed that usually they refuse or disagree with it because of fear of probable paralysis, confusion due to incorrect popular guidance, fear of losing baby during LP, painfulness process of LP (13,14). Even parents who have not been involved in this program, had some fearing about paralyzing in children. Also in this study, relatives and friends were a source of information for parents and unfortunately they did not receive correct information from medical staff (15). Also, about 91% of parents tend to stay with their children during treatment process, such as LP, IV catheters and urinary catheterization (16). In some other studies, the parent-reported anxiety levels during LP was moderate, and there is no relationship between frequency of doing LP and their anxiety level (17).

In a study about parent's anxiety for their children's LP showed that 100% of these parents tend to stay with their children during LP and 25% of parents who were not present during the previous LP, along with their children, they tend to remain with them if LP repeated (10).

In our study, 39 parents (42.9%) expressed importance need to LP for diagnosis as too much and much. According to parents's visiting on LP in Deng's study, 71.4% of parental and in Wong study, 46% of parents had some satisfaction about LP (14).

Our study showed that definite meningitis diagnosis in 11 children (12.1%), 36 children (39.6%) had febrile convulsion, 35 children (38.4%) had seizures plus fever and diarrhea. Our findings were in consistent with some studies results (9).

Conclusion

Based on the results of this study, the main reason for dissatisfaction of the majority of parents about LP in their children, were fear of some side effects such as paralysis. Due to unawareness of most parents about LP usefulness in diagnosis and treatment for children, so it seems that the higher parent 's knowledge level in target group and more positive attitude in this regard, so they will behavior better.

It is notable that late detection, misdiagnosis or delayed treatment of meningitis associated with severe side effects, as in our study over 12% of cases (11cases) were found with definite meningitis in cerebrospinal fluid (CSF) assessment during LP. Therefore informing parents of affected children is very important in the treatment of such diagnostic tests. Therefore, it seems that it is necessary to pay more attention for training in national health plans.

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References

1. Stenklyft PH, Carmona M. Febrile seizure. *Emerg Med Clin North Am* 1994;12(4):989-99.
2. Camfield PR, Camfield CS. Management and treatment of febrile seizures. *Curr Probl Pediatr* 1997; 27:6-13.
3. Carroll W, Brookfield D. Lumbar puncture following febrile convulsion. *Arch Dis Child* 2002;87: 238-40.
4. Akpede GO, Sykes RM, Abiodun PO. Indication for lumbar puncture in children presenting with convulsions and fever of acute onset: experience in Children's Emergency Room

of the University of Benin Teaching Hospital, Nigeria. *Ann Trop Pediatr* 1992; 12: 385-9.

5. Quелlette E. The child who convulses with fever. *Pediatr Clin North Am* 1974;21:467-81.
6. Jafee M, Bar-Jisef G, Tirosh E. Fever and convulsion: indication for laboratory investigations. *Pediatrics* 1981; 67:729-31.
7. Ghotbi F, Katouzian B. Indication of lumbar puncture in infants with their first febrile convulsion. *Journal of The Shaheed Beheshti University of Medical Sciences And Health Services* 2006;30(1): 25-29.
8. Haslam RH. Febrile seizures; in: Text book of pediatrics, Behrman RE. Philadelphia , WB. Saunders , 1996, 1091-2.
9. Casasoprana A, Hachon Le Camus C, Claudet I, Grouteau E, Chaix Y, Cances C, et al. Value of lumbar puncture after a first febrile seizure in children aged less than 18 months. A retrospective study of 157 cases 2013;20(6): 594-600.
10. Narchi H, Ghatasheh G, Hassani NA, Reyami LA, Khan Q. Comparison of underlying factors behind parental refusal or consent for lumbar puncture. *World J Pediatr.* 2013 Nov;9(4):336-41.
11. Wong SLJ, Yeoh AAC, Ooi TC, Lye. Parents View of Lumbar Puncture in Children. *MJPCH* 2010 (Dec); 16; Supplementary 2.
12. Deng CT, Zulkifli HI, Azizi BH. Parents' Views of Lumbar Puncture in Children with Febrile Seizures. *Med J Malaysia* 1994; 49(3):263-8.
13. <http://www.mumus.ac.ir/sheikh> Hospital. Accessed Sep16, 2010.
14. Deng CT, Zulkifli HI, Azizi BH. Parents' views of lumbar puncture in children with febrile seizures. *Med J Malaysia.* 1994;49(3):263-8.
15. Sacchetti A, Lichenstein R, Carraccio CA, Harris RH. Family member presence during pediatric emergency department procedures. *Pediatr Emerg Care.* 1996;12(4):268-71.
16. Tan M, Tan H, Buyukavci M, Karakelleoglu C. Parents' attitudes toward performance of lumbar puncture on their children. *J Pediatr* 2004;144(3):400-2.
17. Haimi-Cohen Y, Amir J, Harel L, Straussberg R, Varsano Y. Parental presence during lumbar puncture: anxiety and attitude toward the procedure. *Clin Pediatr (Phila)* 1996;35(1):2.