

Research Article

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Evaluation of the Parents' Functioning and Behavioral Disorders in Children with and without Vesicoureteral Reflux

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Introduction: Vesicoureteral reflux is the backward flow of the urine from the bladder into the ureters or kidneys that may result in urinary tract infection. This paper aimed at evaluating this problem and its relationship with the children's mood, growth, and physical conditions as well as its influence on the family and school.

Materials and Methods: The study population consisted of 122 children aged 4-14 years old: 61 with and 61 without VUR. The Child Behavior Checklist (CBCL) and Global Assessment of Functioning (GAF) were used to assess the parents' behavior. The data were analyzed using descriptive statistics, Chi-square test, and t test.

Results: In this study, 23% of the children with and 4.9% of the children without VUR suffered depression (P value= 0.007). Moreover, 10.7% of the children with VUR showed offensive behaviors but there found no case among the children in the other group (P value=0.012). In addition, 16.4% of the children with and 1.7% of the children without VUR had intellectual problems (P value=0.008). Furthermore, 27.9% of the children with and 3.3% of the children without VUR had emotional problems (P value=0.001), and 4.9% of the parents of the children with VUR needed serious clinical measures but there were no such cases among children without VUR (P value=0.021).

Conclusions: Increased behavioral problems in children with VUR and declined parental functioning require prompt treatment to prevent future behavioral problems in children.

Keywords: Behavioral Problems; Vesico-Ureteral Reflux; Parents; Child.

Running Title: Parents' Functioning and Behavioral Disorders in Children with and without VUR

Introduction

Vesicoureteral reflux is the backward flow of the urine from the bladder into the ureters or kidneys. Normally, the urine flows only downward from the kidneys to the bladder. Reflux occurs when the valve formed by the ureter pressing against the bladder wall does not close properly, so the urine refluxes from the bladder to the ureter and eventually to the kidney [1].

It usually occurs when a child is born with a ureter that has not grown long enough during the development in the womb. In the absence of the significant development of the children, the structural problems of the UV will never improve. VUR may be familial and 1% of children may be affected [2,3]. Studies estimate that VUR occurs in about 30-40% of the siblings of an affected child.

Secondary VUR may result in distal obstruction of the bladder or other urinary tract disorders. This can be the result of obstruction or infection [4,5]. According to the literature, children with chronic kidney disease have behavioral problems and their parents have high stress levels three times more than the normal children [6,7]. The parents of the children with chronic diseases often have a lower quality of life and suffer other problems (including high levels of anxiety and low adjustment) in management of taking care of their children [8,9]. Most parents have children with chronic diseases; therefore, they are required to act properly, especially for children who are hospitalized in the dialysis unit.

Although the family forms part of the environment around the children which has the greatest influence on them, even greater than the influence of the society, the external influence of the family should not be ignored. Aging and spending more time outside the family, children's attitudes, communications, and relationships increasingly influence on school or neighbors. Such influences are important in identifying the etiology of behavioral disorders. Considering the sensitivity of the children in the society, we decided to study the parents' functioning and behavioral disorders in children with and without vesicoureteral reflux (VUR) in Amir Kabir Hospital, Arak, Iran.

Materials and Methods

This case-control study was conducted on 61 children aged 4 to 14-year-old who were referred to the Children's Clinic of AmirKabir Hospital, Arak, Iran. They were diagnosed with VUR, according to VCUg and the Nelson Textbook of Pediatrics (finding contrast in the ureter or the urinary collecting system in the kidney is called reflux). After obtaining informed consent from the parents, detailed information on the children's physical and mental diseases as well as the parents' age, sex, number of children, occupation, education level, and economic status, and any problem in the children's spine and genital organs were collected. The children with mental retardation and psychiatric disorders as well as those with any problem in their spine and genital organs were excluded from the study. The children with behavioral disorders and the parents with problems in functioning were referred to the psychologist and a diagnosis was made according to the statistical-diagnostic manual of revised mental disorders and DSM-IV-TR; then, they were included in the study.

The parents completed the Global Assessment of Functioning on general levels of the parents' functioning and the Child Behavioral Checklist that is a formal assessment scale similar to behavior assessment techniques and includes a number of advanced psychometric criteria. The control group consisted of 61 unaffected children. We tried to match the two groups in terms of age, sex, and economic status. The data were analyzed with the SPSS version 16 using descriptive and analytical tests (chi-square and t tests).

Results

Of 122 children included in this study, 61 had VUR (the case group) and 61 were unaffected (the control group). In the case group, 32 children (53.5%) were female and 29 (46.5%) were male and in the control group, 31 children (52.5%) were female and 30 children (47.5%) were male. There was no significant difference in sex between the two groups (P value=0.053). There was no consanguinity between the parents of 47 children in the case group (77%), but we found consanguinity between the parents of 14 children (23%). In the control group, the parents of 56 children (91.8%) were related and the parents of 5 (8.2%) were not related, indicating a significant difference between the two groups (P value=0.044).

Regarding the frequency distribution of the father's occupation in the case group, 1 (1.6%) was unemployed, 17 (27.8%) were self-employed, 18 (29.5%) were workers, and 25 (41%) were employees. In the control group, 1 (1.6%) father was unemployed, 13 (21.3%) were self-employed, 3 (4.9%) were workers, and 44 (72.1%) were employees, indicating a significant difference between the two groups (P value=0.004).

Considering the relationship between the father's occupation and the child's behavioral problems, we found a significant relationship between the father's occupation and social (P value=0.021), physical (P value=0.010), and intellectual (P value=0.045) problems in the affected children.

Considering the frequency distribution of the maternal educational level of the affected children, 10 mothers had primary school (16.4%) and 11 (18%) had secondary school education, 25 (41%) had a high school diploma, 2 (3.3%) had an associate degree, 11 (18%) had a bachelor's degree, and 2 (3.3%) had higher degrees. In the control group, none (0%) had primary school and 1 (1.6%) had secondary school education, 13 (21.3%) had a high school diploma, 7 (11.5%) had

an associate degree, 32 (52.5%) had a bachelor's degree, and 8 (13.1%) had higher degrees, indicating a significant difference between the two groups (P value=0.001).

As for the relationship between the mother's educational level and the behavioral problems in the affected children, we found a significant relationship between the mother's educational level and social problems (P value=0.046), offensive behaviors (P value=0.010), aggressive behaviors (P value=0.008), and emotional and psychological problems (P value=0.05) in the affected children.

In the case group, 32 (52.5%) children lived in private houses, 26 (42.6%) lived in rented houses, 2 (3.3%) lived in mortgaged houses, and 1 (1.6%) lived in a offering house.

In the control group, 47 children (77%) live in private houses, 9 (14.8%) lived in rented houses, 1 (1.6%) lived in a mortgaged house, and 4 (6.6%) lived in offering houses, indicating a significant difference between the two groups (P value=0.004). We found a significant relationship between the house ownership status and depression- isolation (P value=0.049), offensive behaviors (P value=0.022), and aggressive behaviors (P value=0.017).

The frequency distribution of depression-isolation in the case group was as follows: 47 children (77%) were had a normal and 14 (23%) had an abnormal status. In the control group, 58 children (95.1%) had a normal and 3 (4.9%) had an abnormal status, indicating a significant difference between the two groups (P value=0.007).

The frequency distribution of physical problems in the affected children showed that 50 children (89.3%) had a normal and 6 (10.7%) had an abnormal status. In the control group, 54 children (98.2%) had a normal and 1 (1.8%) had an abnormal status, indicating no significant difference between the two groups (P value=0.113).

The frequency distribution of social problems in the affected children showed that 48 children (81.4%) had a normal and 11 (18.6%) had an abnormal status. In the control group, 60 (100%) had a normal and none (0%) had an abnormal status, indicating a significant difference between the two groups (P value= 0.001).

Considering the frequency distribution of intellectual problems in the affected children, we found that 51 children (83.6%) were normal and 10 (16.4%) were abnormal. In the control group, 58 (98.3%) were normal and 1 (1.7%) was

abnormal, showing a significant difference between the two groups (P value=0.008).

The frequency distribution of anxiety-depression problems in the affected children showed that 45 children (75%) were normal and 15 (25%) were abnormal. In the control group, 54 (90%) were normal and 6 (10%) were abnormal. Therefore, there was no significant difference between the two groups (P value=0.053).

The frequency distribution of offensive behaviors in the affected children showed that 50 children (89.3%) were normal and 6 (10.7%) were abnormal.

In the control group, 58 children (100%) were normal and none (0%) were abnormal, indicating a significant difference between the two groups (P value=0.012).

The frequency distribution of aggressive behaviors in the affected children showed that 47 children (90.4%) were normal and 5 (9.6%) were abnormal. In the control group, 54 children (98.2%) were normal and 1 (1.8%) was abnormal, showing no significant difference (P value= 0.053).

The frequency distribution of externalized problems in the affected children showed that 35 children (70%) were normal and 15 (30%) were abnormal. In the control group, 48 children (88.9%) were normal and 6 (11.1%) were abnormal, showing a significant difference (P value=0.026).

The frequency distribution of internalized problems in the affected children showed that 47 children (78.3%) were normal and 13 (21.7%) were abnormal. In the control group, 53 children (96.4%) were normal and 2 (3.6%) were abnormal, indicating a significant difference (P value=0.005).

As for the frequency distribution of emotional and psychological problems in the affected children, 44 children (72.1%) were normal and 17 (27.9%) were abnormal. In the control group, 59 children (96.7%) were normal and 2 (3.3%) were abnormal, showing a significant difference between the two groups (P value=0.001).

Considering the parents' functioning in the case group, 3 families (4.9%) needed serious clinical measures, 10 families (16.4%) needed milder measures, and 48 families (78.7%) needed no clinical measures while only 3 families in the control group (4.9%) needed mild clinical measures, indicating a significant difference between the two groups (P value=0.021).

Discussion

We evaluated the parents' functioning and behavioral problems in children with VUR.

The results showed that internalized problems (including anxiety problems, depression-isolation, social, and physical problems), externalized problems (including aggressive and offensive behaviors), and intellectual, emotional, and psychological problems were more common in the affected children. Furthermore, we found a significant difference between the parents' dysfunction in the case group as compared to the control group.

Since we found no research on the relationship between the parents' functioning and behavioral problems in the children with VUR, we used other researches with similar subjects.

The results of this paper are similar to the results of a study by Vonn Gontard. He found that abnormal CBCL criteria in the children with primary nocturnal enuresis were 3 times more common than normal children [6]. Moreover, our results are in line with the results of a study by Say Chang entitled "behavioral problems in the children with primary nocturnal enuresis and their parents' stress" [7].

In the present case-control study, we used the CBCL to study the behavioral problems of children with and without VUR.

Considering the internalized problems (including isolation-depression, anxiety, and physical problems), 23% of the affected children and 4.9% of the normal children had depression- isolation, indicating no significant statistical difference (P value=0.007). There was no significant difference in other problems.

These results conform to the results of a study by Panajiota et al on 23 male children aged 4-15 years with nephrotic syndrome and 20 normal children aged 4-13 years old. They found that the behavioral problems like depression and anxiety were more common in children with nephrotic problems under treatment with steroid than normal children [10].

Regarding the externalized problems (aggressive and offensive behaviors) in this study, 10.7% of the children had offensive behaviors while we found no cases in the control group, indicating a significant difference between the two groups (P value=0.012).

It is worth noting that Doaa et al in a study on 30 children with nephrotic syndrome in 2013 found similar results. They concluded that the prevalence of behavioral disorders such as

neurosis, inattention, hyperactivity, and offensive and aggressive behaviors in the children with nephrotic syndrome was 2 times more than normal children [11].

Considering intellectual problems, 16.4% of the children had intellectual problems while only 1.7% of the children suffered from such problem in the control group, indicating a significant difference between the two groups (P value=0.008).

About 27.9% of the affected children suffered from emotional and psychological problems while 3.3% of the normal children had these problems, showing a significant difference between the two groups (P value= 0.001).

Parramatta reported similar results in a research entitled "behavioral disorders in the children with nephrotic syndrome" on 50 affected children in India in 2008. He concluded that the prevalence of behavioral disorders such as emotional and communication problems and obsessive-compulsive disorders was 68% in the children with nephrotic syndrome and 21.6% in the control group [12].

In addition, 18.6% of the children had social problems while we found no cases in the control group, indicating a significant difference between the two groups (P value=0.001).

The use of the GAF to measure the parents' functioning showed that 4.9% of the parents of affected children and none of the parents of healthy children required serious clinical measures. Moreover, 16.4% of the parents of affected children and 4.9% of the parents of healthy children needed milder treatments, indicating a significant difference between the parents of the two groups (P value=0.021).

Conclusions

The results of this study showed a high prevalence of depression-isolation, social, emotional-psychological, and intellectual problems and offensive behaviors in the children with VUR. Therefore, early diagnosis and treatment of behavioral disorders is required to prevent these disorders as well as other mental-psychological and physical problems and loss of function in these children.

Conflict of Interest

Authors declare that they have no conflicts of interest.

Informed consent

Informed consent was obtained from all individual participants included in this study.

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Contribution of authors

PY: Contributions to the conception and design of the research; analysis and interpretation of data; final approval of the manuscript

SR: Contributions to the acquisition and analysis of data; drafting of the manuscript and final approval of the manuscript

AM: Contributions to the conception and design of the research analysis; interpretation of data.

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