Anxiety Disorders and Pediatric Continuous Ambulatory Peritoneal Dialysis

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ABSTRACT: This paper compared 23 children with end-stage renal disease (ESRD) on continuous ambulatory peritoneal dialysis to a matched sample of healthy children. The rate of separation anxiety disorder was significantly higher in the children with ESRD. In their family environments, mothers of ESRD children reported significantly lower independence and achievement orientation than mothers of control children.

KEY WORDS: End-stage renal disease (ESRD); continuous ambulatory peritoneal dialysis (CAPD); family; child; separation anxiety disorder.

Introduction

Since 1980, continuous ambulatory peritoneal dialysis (CAPD) therapy has been established as a successful treatment for children with end-stage renal disease (ESRD).[1,2] Unlike hemodialysis, the CAPD therapy has allowed children with ESRD to perform dialysis at home, and is a form of dialysis utilizing the peritoneum as a semipermeable membrane for the exchange of body solutes and fluids. In general, ESRD patients receiving CAPD therapy have to exchange them four to five times a day. The fluid is contained in sterile plastic bags which are connected and disconnected from the system at the time of exchange.

Psychologically, several studies have shown that CAPD therapy

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brings psychosocial benefits to ESRD children participating in this treatment.[3-8] For instance, they may go to school and play between exchanges of dialysis fluids. In pediatric consultation-liaison service, however, we sometimes encounter ESRD children with anxiety disorders. In a chronic medical illness such as ESRD, the children unconsciously tend to depend on their mothers. On the other hand, some mothers accept their children's dependence and respond to their desires. The mothers often find it difficult to encourage the independence appropriate to a child's age when the child's life depends on the parent's close medical supervision and timely intervention. The purpose of the present study is to examine separation anxiety disorder (SAD) and family's environment in a sample of 23 ESRD children and their mothers.

Subjects and Methods

The subjects were 23 pairs of children (15 males and 8 females) receiving CAPD therapy at Tokyo Metropolitan Children's Hospital due to ESRD, and their mothers. The mean ages of both children and their mothers were 10.6 (SD = 4.8; range, 4 to 18) and 40.3 (SD = 6.3; range, 29 to 50) years, respectively. The ESRD patients consisted of 5 preschool children, 11 elementary school children, and 7 junior high school students or older ones. The mean period of CAPD therapy was 32.8 (SD = 29.5; range, 10 to 108) months. All subjects were admitted to our hospital once a month to receive an evaluation of their somatic condition. As controls, we used 23 healthy children and their mothers, matched for age and sex. They were selected at random from mothers with healthy children living in the Tokyo Metropolitan area. Children and their mothers with any of the following criteria were excluded from the present study: (1) the period of psychiatric observations was less than 10 months; (2) interviews and psychological tests below could not be performed adequately.

Procedure

After obtaining informed consent of children and their mothers, the following interviews were performed monthly for 10 months. During the first three months, the Diagnostic Interview for Children and Adolescents (DICA)[9-11] (a structured instrument that is based on diagnostic criteria from DSM-III-R[12]) was administered to all children to assess the presence or absence of anxiety disorders. Rated DSM-III-R childhood anxiety disorders were SAD, overanxious disorder, avoidant disorder, and phobic disorders. For the remaining 9 months, ordinary psychiatric interviews were administered to all children to judge the presence or absence of other psychiatric symptoms.

The Family Environment Scale (FES) was administered to the mothers.

Table 1
Anxiety Disorders in ESRD Children

Anxiety Disorders by DSM-III-R	*Subjects (N=23)*	*Controls (N=23)*
Anxiety Disorders	16 (69.6)*	2 (8.7)
(1) Separation Anxiety Disorder	15 (65.2)*	1 (4.3)
(2) Avoidant Disorder	1 (4.3)	1 (4.3)
(3) Overanxious Disorder	4 (17.4)	0 (0.0)

Results were shown in number of cases (percentage).
*Significant difference between subjects and controls
$p<.01$ (Chi-square test)

The FES is a questionnaire developed by Moos[13] to investigate a family's environment and its psychological state. It consists of 90 questions on 10 subscales such as Cohesion, Expressiveness, and Conflict.

We used student's paired t-tests to examine differences between the mean scores of the FES subscales reported by mothers of subjects and controls. Differences were considered statistically significant when the p value was <0.05 or <0.01 (two-tailed). We also used the chi-square test to compare the rate of anxiety disorders between subjects and controls.

Results

Table 1 presents the anxiety disorders results in subjects and controls. The rate of anxiety disorders was significantly higher in subjects than in controls ($\chi^2=17.89$, $df=1$, $p<.01$). Of anxiety disorders, the rate of SAD in subjects was very high compared to that in controls ($\chi^2=18.78$, $df=1$, $p<.01$).

The symptoms of SAD in the first three months were shown in Table 2. Of 9 symptoms concerning SAD by DSM-III-R, the rate of 3 symptoms (persistent reluctance or refusal to go to school, persistent avoidance of being alone, and complaints of physical symptoms) were significantly higher in subjects than in controls ($\chi^2=22.65$, $df=1$, $p<.01$; $\chi^2=25.32$, $df=1$, $p<.01$; $\chi^2=20.18$, $df=1$, $p<.01$). For the remaining 9 months, any psychiatric disorders except anxiety disorders were noted in all ESRD children.

Table 3 shows the results of FES in the mothers of ESRD children and controls. The scores of 2 FES subscales, independence and achievement orientation, were significantly lower in mothers of ESRD children than in mothers of control children ($t_{44}=3.17$, $p<.01$; $t_{44}=3.35$, $p<.01$).

Table 2
Symptoms of Separation Anxiety Disorder in ESRD Children

Symptoms (DSM-III-R)	*Subjects (N=23)*	*Controls (N=23)*
(1)	2 (8.7)	1 (4.3)
(2)	3 (13.0)	1 (4.3)
(3)	18 (78.3)*	2 (8.7)
(4)	4 (17.4)	2 (8.7)
(5)	19 (82.6)*	2 (8.7)
(6)	1 (4.3)	1 (4.3)
(7)	17 (73.9)*	2 (8.7)
(8)	8 (34.8)	1 (4.3)
(9)	9 (39.1)	1 (4.3)

Results were shown in number of cases (percentage)
*Significant difference between subjects and controls
$p<.01$ (Chi-square test)
Symptoms concerning separation anxiety according to DSM-III-R
(1) unrealistic and persistent worry about possible harm befalling major attachment figures or fear that they will leave and not return
(2) unrealistic and persistent worry that an untoward calamitous event will separate the child from a major attachment figure
(3) persistent reluctance or refusal to go to school
(4) persistent reluctance or refusal to go to sleep
(5) persistent avoidance of being alone
(6) repeated nightmares involving the theme of separation
(7) complaints of physical symptoms
(8) recurrent signs or complaints of excessive distress in anticipation of separation from home or major attachment figures
(9) recurrent signs or complaints of excessive distress when separated from home or major attachment figures

Table 3
Family Environment Scale (FES) in Mothers with ESRD Children

Family Environment Scale (FES)	*Mothers of ESRD Children (N=23)*	*Mothers of Control Children (N=23)*
Cohesion	6.7±2.2	6.4±1.7
Expressiveness	6.0±1.6	5.3±1.9
Conflict	3.9±1.9	3.5±1.8
Independence	4.2±1.4*	6.6±1.9
Achievement Orientation	3.3±1.9*	5.4±2.1
Intellectual-Cultural Orientation	4.6±2.2	4.9±2.2
Active-Recreational Orientation	4.3±1.7	5.0±1.9
Moral-Religious Emphasis	4.3±1.4	4.6±1.3
Organization	5.9±1.8	5.6±1.8
Control	4.3±1.6	4.5±1.7

Results were shown in Mean±SD
*Significant difference between subjects and controls
$p<.01$ (Student's paired t-test)

Discussion

The results of this study indicate a high rate of ESRD children with SAD. According to Francis et al. study,[14] the most common symptoms of SAD in 5- to 8-year-olds included school refusal and unrealistic worries about harm to attachment figures; the most frequently endorsed symptoms in 9- to 12-year-olds was excessive distress at times of separation; and the most commonly reported criteria in 13- to 16-year-olds were somatic complaints and school refusal. In the present study, however, the common symptoms of SAD included school refusal, persistent avoidance of being alone, and somatic complaints. Interestingly, only 8.7 % of the ESRD children manifested unrealistic worries about harm to attachment figures. The results of this study suggest that the pattern of symptoms endorsed by the ESRD children may be somewhat different than the pattern of symptoms reported by children with SAD who do not have a chronic medical illness.

Summary

Most children with end-stage renal disease can understand the fact that they are obliged to receive CAPD therapy to preserve their lives. However, their somatic crisis induces a psychological one. The children suffering from chronic medical illness such as ESRD unconsciously try to maintain their own mental stability by depending on their mothers.[15] The SAD symptoms of ESRD children appear to differ from those seen in children who do not have a chronic medical illness. Therefore, dependence on their mothers may be explained as a response to their psychological crises. On the other hand, mothers are apt to be overprotective of these children because they suffer from such a serious disease.[15]

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