

Stressful Life Events and Painful Recurrent Colic of Renal Lithiasis

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Purpose: There is strong evidence concerning the influence of life event stress on the onset and course of painful acute episodes in primary care. However, few studies have analyzed stressful life events in painful recurrent episodes of renal stone disease. We evaluated the association between painful recurrent colic of renal lithiasis and stressful life events.

Materials and Methods: We performed this case-control study in a primary care setting. Study participants were 194 subjects (97 cases and 97 controls) matched according to age and gender. Cases were outpatients with a confirmed diagnosis of nephrolithiasis. The control group consisted of patients seen at the Ophthalmology Outpatient Clinic of the University Hospital, reporting only refraction symptoms and presenting no chronic or acute pathology. Main outcome measures reported were stressful life events as measured by the Social Readjustment Rating Scale.

Results: The mean Social Readjustment Rating Scale of cases was significantly higher than controls at 257.56 (\pm 193.81) vs 144 (\pm 131.24), respectively. Logistic regression revealed that belonging to the case group increased the chances of showing positive results on the scale greater than or equal to 100 (OR 3.02, 95% CI 1.64-5.59) and the chance of presenting results of 200 or greater was 2.87 (OR 2.87, 95% CI 1.58-5.22).

Conclusions: Stressful life events were significantly greater among cases than controls.

Key Words: kidney calculi, life change events, lithiasis, colic, stress

In the last 4 decades various researchers have focused on evaluating the association between stressful life events and the development of illness.¹⁻¹⁰ Many of these studies have brought out strong evidence⁴⁻⁶ linking stress with recurrent painful diseases such as headache,⁴ musculoskeletal pain,⁹ coronary artery disease,^{5,8,10} and abdominal pain,⁶ albeit in studies using differing designs in diverse populations.^{4,6,10}

However, a search of the literature for specific studies associating stress and recurrent painful renal colic resulted in only 1 article involving the systematic administration of a questionnaire based on standardized diagnostic instruments previously used in primary care.¹¹ In light of the dearth of information in the area, this study was designed to test whether the frequency of stressful life events before the onset of renal colic crises is greater in patients with this pathology than in a group of control subjects.

METHODS

To evaluate stressful life events in patients with recurrent renal colic a case-control design was applied. A total of 194 subjects (97 cases/97 controls) was seen at Hospital São Paulo-UNIFESP clinic. Cases were selected from all patients followed at the renal lithiasis clinic from 2001 and 2004. All charts were examined to check inclusion criteria.

Patients were selected at random, but were included in the study after verifying all inclusion and exclusion criteria in an initial interview.

Cases were outpatients with a confirmed diagnosis of renal lithiasis under treatment by nephrologists at the Nephrology Outpatient clinic of this university hospital through case histories, clinical symptoms, image examination and blood/urine laboratory routines. Although patients had a confirmed diagnosis using images and subsidiary examinations, the number of episodes of recurrent renal colic since diagnosis was taken from patient subjective description, and new laboratory examinations were not performed to check each reported episode. Patients had a history of at least 2 episodes in a 3-year period but were currently in an inter-crisis interval. The renal stone diagnosis was done before study evaluations. Assessment was performed after at least 2 months following the last renal colic episode to avoid disruption of quality of life during this acute crisis, potentially influencing results. Exclusion criteria were pregnancy, mental disorders (psychosis, mental deficiency, alcohol or drug abuse) or painful crises not related to renal stones, or receiving drug therapy for anxiety, depression and/or any other psychiatric treatment. There were 7 patients initially selected as cases who refused to participate. The reasons for refusal were inability to wait for the interview or to be present for another interview. Patient records showed no statistically significant difference between participants and nonparticipants or influence on results.

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Nothing to disclose.

Study received approval from the Ethics Committee of Universidade Federal de São Paulo, Brazil (0843-03).

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The control group consisted of 97 patients from the Ophthalmology Outpatient Clinic of this university hospital with refraction symptoms and no associated disease. Controls were individually matched for gender and age, and were selected consecutively. The exclusion criteria were the same as those previously mentioned, in addition excluding anyone with renal disease. Only 5 of the controls initially selected were unable to participate in the study. Demographic information (such as race, gender and age) showed no statistically significant difference between participants and non-participants or influence on results.

Proceedings

The study was approved by the Ethics Committee of Universidade Federal de São Paulo, Brazil (0843-03). After obtaining written consent to participate in the study, cases and controls filled out a questionnaire to collect sociodemographic data. The clinical treatment of patients who refused to participate was not influenced. Interviewing was done face-to-face with trained and professional interviewers not involved in clinic routine. The questionnaire consisted of demographic information, present and past history of kidney stone disease, time of diagnosis, time of initial painful symptoms of renal stone formation, number of episodes of renal colic, and socioeconomic information through the Escala da Associação Brasileira dos Institutos de Pesquisas de Mercado (ABIPEME). A questionnaire was applied to assess life events along with the other evaluation forms. The control group followed the same sequence as cases. The questionnaires and database were checked to evaluate data consistency.

Instruments

Stressful life events were evaluated by the Social Readjustment Rating Scale, developed in 1967 by Holmes and Rahe,¹ and translated and adapted for Brazil in 1984 by Lipp.¹² The Social Readjustment Rating Scale is a widely used instrument in fieldwork to measure stressful life events,¹³ and proposes that the effort required for an individual to readjust to society following stressful life events causes exhaustion that can precipitate the onset of many different diseases.

This scale takes only the great events of a person's life into account rather than everyday events. Researchers organized a list of significant events such as divorce, death in the family, birth of a child in the family, job change, etc. The list is presented to individuals being examined, asking them if they have been exposed to any of these events during the year before the event being studied.

Event scores are weighted by an anticipated impact for each event. Impact expectations were normalized for the American population. While the questionnaire has been translated and validated in our environment, results have not been published. Total scores are divided into 4 impact categories of less than 119—low, 119 to 199—moderate, 200 to 299—median, and more than 300—high. The instrument is simple to use and has face validity (see Appendix), and is used as an indicator of major events while disregarding smaller problems. According to median scores obtained in the 2 groups, cutoff points were adopted for defining a positive SRRS stressful events of 100 or

greater (low to high impact) and 200 or greater (median to high impact).

Statistical Analysis

Sample size was calculated according to a preliminary study evaluating symptoms of anxiety and depression in renal lithiasis in subjects with a history of recurrent renal colic. Our findings indicate a 12.5% difference between cases and controls with low levels of anxiety. Thus, we needed at least 92 subjects per group (92 cases and 92 controls) to detect such a difference at a 5% level of significance with discrimination power higher than 90%.

The categorical variable was presented in absolute and relative frequencies (%), and interval variables by mean, standard deviation, median, maximum and minimum values. The chi-square test was used to analyze the frequency of each of the items in the Social Readjustment Rating Scale for comparison among groups. Factors identified as possibly associated with stressful life events after bivariate analysis entered into multiple logistics regression to identify the independent effects on stressful impact (100 or greater low to high impact and 200 or greater median to high impact). A $p < 0.05$ was considered significant.

RESULTS

Table 1 shows sample sociodemographic data. Of the 194 patients studied 126 were female (63%), mean age 44 ± 11 years old (range 18 to 65), a majority were white race (70%), and 51.5% of cases and 48.5% of controls were socioeconomic status C (middle class). Table 2 shows statistically significant differences between cases and controls in relation to total scores on the Social Readjustment Rating Scale, and in relation to the distribution of the 4 scale categories. Table 3 shows statistically significant associations between the impact of events, and cutoff points of 100 or greater and 200 or greater between cases and controls.

Logistic regression revealed that belonging to the cases group increased the likelihood of presenting with scores of 100 or greater on the SRRS (OR 3.02, 95% CI 1.64-5.59) and it increased the chance of presenting with scores of 200 or greater on the SRRS (OR 2.87, CI 1.58-5.22). Table 4 compares groups for the proportion represented by each of the components on the events scale.

DISCUSSION

In addition to demonstrating an association between stressful life events and kidney stones, overall findings for the year before renal colic episode onset indicate an increased level of stressful life events for our cases, in that more than a third of the sample revealed high (300 or greater) stress scores. On item analysis there was greater impact of some life events for cases than for controls, especially regarding changes in professional activity such as changes in line of work and schedule, as well as financial, relational, social and physical difficulties.

Pain is an experience determined by a confluence of precipitating and triggering causal factors, while simultaneously presenting various dimensions such as sensorial, affective, cognitive, etc. Thus, pain is a multidimen-

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