Toxicological evaluation of two children diagnosed as Munchausen syndrome by proxy

Zeynep Türkmen[1], Neylan Ziyalar[2], Itır Tari[3], Selda Mercan[1], Sinan Mahir Kayıran[4], Dicle Şener[5], Salih Cengiz[1], Necla Akçakaya[5]

Departments of [1]Science, and [2]Social Sciences, İstanbul University Institute of Forensic Sciences, [3]Department of Psychology, Aydın University Faculty of Arts and Sciences, [4]Department of Pediatrics, American Hospital, and [5]Department of Pediatrics, İstanbul University Cerrahpaşa Faculty of Medicine, İstanbul, Turkey

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Munchausen syndrome by proxy is a kind of child abuse in which affected children are often hospitalized for long periods and endure repetitive, painful and expensive diagnostic attempts.

We present herein two toxicologically confirmed cases of Munchausen syndrome by proxy. Case 1 is a 16-month-old male who had fever, peripheral cyanosis, tremor, and reported cardiac arrest. Symptoms recurred in the hospital when the mother administered fluids. Toxicology detected 3.5 ng/ml mercury (Hg) in the fluid and 9.4 μg Hg/g creatinine in the urine. Case 2 is a 14-year-old female who had irregular blood findings and multiple hospitalizations. Serum analysis detected warfarin. Both mothers were transferred to psychiatric care. Munchausen syndrome by proxy should be suspected when clinical/laboratory findings are negative, illness descriptions are inconsistent, and frequent hospitalization yields no diagnosis. Psychiatric evaluation and toxicological analysis are recommended.

Key words: child abuse, Munchausen syndrome by proxy, psychopathology, toxicological analysis.

Child abuse, defined as any behavior that negatively affects the health, growth and development of the child, is a medical, legal, developmental, and psychosocial problem in all societies. Child abuse falls into three categories: physical, sexual and emotional abuse[1].

Asher[2] first used the term "Munchausen syndrome" to describe psychopathic adults who fabricated illnesses to obtain attention by seeking unnecessary medical procedures and treatments at a series of hospitals. These individuals adopt a variety of tactics, often involving self-injury, to mimic trauma or disease. The *Diagnostic and Statistical Manual of Mental Disorders (4th ed)*[3] used the term "factitious disorder by proxy" to describe a psychiatric illness in which the perpetrator fabricates or inflicts illnesses on a victim. Meadow[4] coined the term "Munchausen syndrome by proxy" to describe a parent/guardian's fabrication or inducement of symptoms in a child, in some cases with fatal consequences. Children affected by this syndrome are often hospitalized for long periods and endure repetitive, painful and expensive diagnostic attempts. Affected children have developed emotional and physical problems, including mistrust, avoidance of medical treatment and posttraumatic stress disorder. Many of the children's siblings are also physically and medically abused.

Although the underlying physiopathological mechanism of Munchausen syndrome by proxy remains unclear, psychiatric treatment of the abusive adult, most often the child's mother, may improve the situation. The mother often appears intelligent, cooperative, interested in the child's health, and grateful for good medical care; she frequently embellishes the hospital environment. Narcissistic fragility and borderline personalities are common, but affected individuals may also show passive-dependent hysterical personalities or sadomasochistic behaviors and depression. Physicians inadvertently participate in this

potentially fatal scenario by conducting unnecessary invasive examinations or by prescribing dangerous medicines; this may be avoided by detecting inconsistencies in the adult's description of the illness, carefully reviewing laboratory and radiological test results, and noting unexpected adverse effects of medical treatment.

In this report, we present the first two cases of Munchausen syndrome by proxy in Turkey that have been supported by toxicological findings.

Case Reports

Case 1

A 16-month-old male patient was admitted to the hospital due to moaning attacks, fever (39°C), peripheral cyanosis, and tremor. The infant's mother reported two incidents of cardiac arrest with rapid response to cardiac resuscitation. In the pediatric intensive care unit, the cyanosis, tremor, and fever attacks did not recur and no cause of cardiac arrest was found. After the patient left the intensive care unit, the attacks did not recur while he occupied a room with another patient. These attacks developed in association with the mother's provision of a bottle containing juice or water. The mother appeared uninterested in the child and often left the clinic, but treated the medical staff extremely well. Hospital discharge was planned because the patient's attacks had not recurred for two weeks, but his condition worsened again on the day of the planned discharge. The Laboratory of Forensic Toxicology, Institution of Forensic Sciences requested toxicological screening of the patient's urine and bottle contents with the provisional diagnosis of Munchausen syndrome by proxy. Inductively coupled plasma mass spectrometry (0–50 ng/ml linear range) for 15 toxic elements (e.g., lead [Pb], aluminum [Al], nickel [Ni], mercury [Hg], and cadmium [Cd]) detected 3.5 ng/ml Hg in the bottle contents and an elevated Hg level (9.4 μg Hg/g creatinine) in the patient's urine (Fig. 1). Normal values were obtained for all other elements, and liquid chromatography–tandem mass spectrometry (LC-MS-MS) detected no suspected organic compound in the urine or bottle content samples (Fig. 1).

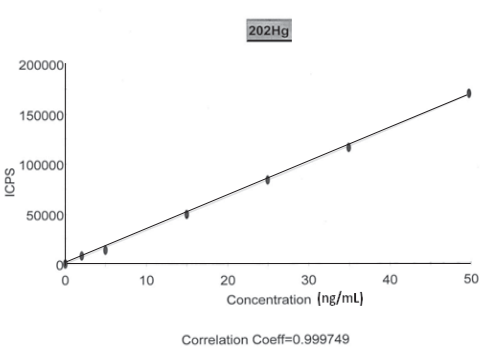

Figure 1. Calibration curve of mercury (Hg) generated in the 0–50 ng/ml range in Case 1, acquired by inductively coupled plasma mass spectrometry. 202Hg: 202 is the molecular mass weight of the related isotope of Hg. ICPS: Count per second, Detector response. Correlation coeff: Correlation coefficient. ng/ml: Nanogram/milliliter.

Case 2

A 14-year-old female patient was suspected to be a victim of Munchausen syndrome by proxy on the basis of findings such as acquired changes in K vitamin-dependent factors, prothrombin time, partial thromboplastin time, and international normalized ratio (INR) values varying spontaneously, as well as hospital records from different cities within a short period of time. LC-MS-MS analysis (daughter ion, *m/z* 161; precursor ion, *m/z* 306) of the patient's serum revealed that warfarin was the responsible compound (Fig. 2). This determination was based on the standard curve of the peak areas of the *m/z* 161 daughter ion (the base peak) for standard solutions equivalent to 0.10, 0.20, 0.50, and 1.0 ppb in serum (made with a warfarin reference material for comparison). The peak in the upper chromatogram in Figure 2 represents warfarin in the serum sample of the patient for a comparison with the chromatogram below, which is in a concentration of 500 ng/ml warfarin stock solution. After the proper extraction for serum sample, LC-MS/MS was applied to both this extract and the warfarin stock solution and results are shown together in Figure 2 for a good comparison. The identification was revealed by overlaid peak response (retention time) and mass ion fragments mentioned above. Area under the peak is used for the determination of the drug concentration. When peak area obtained from the serum sample of the patient was

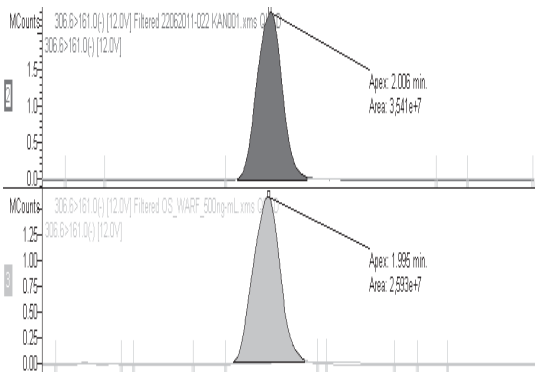

Figure 2. Serum sample analysis (*vs*. warfarin reference standard serum) by liquid chromatography–tandem mass spectrometry for Case 2. Apex: Retention time of the related peak. Area: Represents the area under the peak. Mcounts: Mega count (Detector response).

proportioned to the area related with warfarin reference material, 683 ng/ml warfarin was found in the serum semiquantitatively. This value is compatible with other intoxication cases.

The mother was diagnosed with Munchausen syndrome by proxy and transferred to psychiatric service because the parents requested immediate discharge after meeting with the doctor.

Discussion

In both of the cases presented here, a child's somatic complaints were used to obtain medical attention, but the symptoms were not of organic origin and did not conform with clinical manifestations. Munchausen syndrome by proxy was thus suspected, and was confirmed when toxicological analyses detected toxic substances. The conflicting medical histories, fabricated symptoms, and presentation at various hospital clinics in our cases suggested the diagnosis of Munchausen syndrome by proxy. Some articles related to Munchausen syndrome by proxy have been reported in some forensic journals[6,7]. In one study, the importance of the toxicological analysis was also highlighted in such cases[8]. Five cases of Munchausen syndrome by proxy in Turkey have been reported previously[9-13], but the two cases reported here are the first in Turkey to have been confirmed by toxicological analysis.

Psychosocial factors are known to play an important role in the pathogenesis of this syndrome. The perpetrator's requirements are mostly satisfied by being present in the hospital and receiving care and interest related to the examination of his/her child. During consultation, the mothers in these cases did not display the anxiety or verbal or behavioral sense of disturbance expected when a child is serially hospitalized and repeated examination fails to yield a diagnosis. On the contrary, they appeared quite comfortable and peaceful. These characteristics are consistent with Munchausen syndrome by proxy. The abuse of children and adolescents by parents/guardians with this syndrome is characterized by a lifestyle including repeated hospital application and visitation of different doctors. Parents affected by this syndrome have difficulty forming close relationships, tend to view the doctor as an object of selfhood, and fear that they will not be accepted, valued and treated compassionately[14]. Thus, they attempt to rebuild the desired parent-child relationship through imitated illnesses[4].

This case presentation was limited by the difference in age between the two patients, and the lack of previous medical history or developmental data for the patients. We were also unable to follow the mothers' cases after transfer to the psychiatric clinic. However, the toxicological confirmation of Munchausen by proxy in the mothers in these cases provides important insight into the detection of this form of child abuse.

In conclusion, a multidisciplinary approach including psychiatric evaluation of the adult and toxicological analysis of the child is required for the diagnosis of Munchausen syndrome by proxy. Such analyses should be performed when a pediatric patient's clinical and laboratory findings are negative, complaints and descriptions of the illness are inconsistent, and a diagnosis cannot be reach despite frequent hospital visitations. Early diagnosis reduces unnecessary health expenses, examinations, and diagnostic difficulties, and decreases the individual's risk of causing harm to his/her environment.

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