



# Managing Non-epileptic Seizures and Psychogenic Dystonia in an Adolescent Girl with Preterm Brain Injury

Catherine Chudleigh, D Clin Psych, MSc, Kasia Kozłowska, MBBS, PhD, FRANZCP, Kavitha Kothur, MBBS, MD Dch paediatrics, Fiona Davies, M Psych (Applied), PhD, Holly Baxter, B Ap Sci, Andrea Landini, MD, Philip Hazell, BMedSc, MBChB, PhD, FRANZCP, and Gaston Baslet, MD

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## CASE HISTORY

Aasha was a 17-year-old graphic arts student referred to the Department of Psychological Medicine for treatment of conversion symptoms. She was born prematurely,\* adopted at birth, and lived with her adoptive parents (Mr. and Mrs. Riley). Throughout childhood, Aasha received remedial therapies for cognitive deficits and right hemiplegic cerebral palsy secondary to an intraventricular hemorrhage in utero. At 15 years of age, she underwent orthopedic surgery for a right equinus deformity. She recovered fully and went on to train as part of an elite athletic team for the disabled. Six months after the surgery, she began to suffer from sleep difficulties and pain in her right knee. A year later, new symptoms emerged: abdominal pain, menorrhagia, sensory loss and dystonia (persistent abnormal posturing) in her right foot, and non-epileptic seizures. At presentation, Aasha's seizures occurred six to eight times a day and lasted up to 45 minutes each: she would become drowsy and be unable to talk, and her limbs would shake and stiffen.

After all medical explanations for Aasha's neurological symptoms had been excluded (Text Box 1), a multidisciplinary consultation-liaison team (comprising a child psychiatrist, clinical psychologists, a nurse consultant, and a

pediatric resident) conducted the psychiatric and family assessments. At the first assessment Aasha was angry. She refused to answer any questions and declined the multimodal rehabilitation admission offered by our team.<sup>1</sup> Six months later, Aasha's family requested a second assessment. Her non-epileptic seizures had increased in frequency and length; her teachers could no longer manage her in the classroom; and the family were at their wits' end. Although Aasha maintained that she did not want to be treated by our team, we managed this impasse by informing her that we would put in a request for an admission—as requested by her parents—and that she could accept or reject the bed when it became available. Following this appointment, Aasha's parents enacted an ultimatum by refusing to drive her to activities outside the home and by telling Aasha that she would have to manage her illness on her own unless she accepted medical treatment. When the rehabilitation bed became available, Aasha reluctantly accepted.

## Constructing a Working Formulation

It took our team many months to piece together the history of the presenting illness and to understand Aasha's presentation in the context of her life story and her family's functioning. Aasha had always been a vulnerable child. Her capacity to manage change and any sort of life stress—disagreements with friends, changes in routine, negative comments from teachers—had always been compromised due to cognitive inflexibility and difficulties with executive functioning and verbal comprehension.<sup>2</sup> Her IQ, tested at the age of 16, was in the low-average range.

Mrs. Riley worked as a physical education teacher. This very active job provided much satisfaction because she was able to care for children in a structured, concrete, and physical manner. Mrs. Riley also worked hard to be a

**From** The Children's Hospital at Westmead, Westmead, New South Wales, Australia (Drs. Chudleigh, Kozłowska, and Davies; Ms. Baxter); Discipline of Psychiatry, University of Sydney Medical School (Drs. Kozłowska and Hazell); Brain Dynamics Centre at Westmead Hospital, Westmead, New South Wales, Australia; Scuola Bolognese di Psicoterapia Cognitiva, Bologna, Italy (Dr. Landini); Thomas Walker Hospital (Rivendell), Concord West, New South Wales, Australia (Dr. Hazell); Harvard Medical School (Dr. Baslet); Brigham and Women's Hospital, Boston, MA (Dr. Baslet).

**Correspondence:** Catherine Chudleigh, D Clin Psych, MSc, The Children's Hospital at Westmead, Psychological Medicine, Locked Bag 4001, Westmead, NSW 2145, Australia. Email: catherine.chudleigh@health.nsw.gov.au

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\*Aasha had been born at 28 weeks and had a birth weight of 1.2 kilograms.

**Text Box 1**

Summary of Medical Investigations  
(all investigations normal except as indicated by bold type)

## Blood investigations

Full blood count  
Erythrocyte sedimentation rate  
Serum electrolytes  
Calcium/magnesium/phosphate  
Renal and liver function tests  
Thyroid function tests  
Iron studies, vitamin B12, and folate  
25-hydroxy cholesterol  
ANA and anti-dsDNA  
Hepatitis B serology  
P450 cytochrome enzymes (CYP2D6 & CYP2C19):  
extensive metabolizer

## Endocrine investigations

Luteinizing and follicle-stimulating hormone: **low sex steroid hormones**

## Imaging

MRI brain: **Mild left ventricular dilatation, periventricular white matter hyperintensities and some white matter loss, consistent with the perinatal history of periventricular hemorrhage**

MRI spine

X-ray pelvis

Ultrasound abdomen (for menorrhagia)

MRI knee

Bone scan lower limb

X-ray lower limb

## Electrophysiological studies

Surface EMG: **Nearly continuous EMG activity was evident in the right leg and foot antagonists, both with rest and activity, consistent with the fixed foot posture. With walking, EMG activity decreased, and the pattern of EMG activation was appropriate, although the amplitude and duration of EMG bursts in the activated muscles were increased. The findings of preserved reciprocal patterns of lower limb muscle activation during walking are atypical for dystonia.**

Nerve conduction velocity

EEG

Video telemetry (three events recorded)

## Other

Urea breath test for *Helicobacter pylori* (for abdominal pain)

supportive mother and had created supportive scaffolding around Aasha by helping her through decision-making processes, stressful interpersonal interactions, and school work. Mrs. Riley found it difficult, however, to facilitate Aasha's emotional regulation. During her own childhood, Mrs. Riley had learned to inhibit her own negative emotions—pain, distress, depression—as a means of managing her

chronic abdominal illness and the associated medical procedures that had resulted in numerous, sometimes prolonged separations from her attachment figures. She tended to manage distress by pushing negative feelings out of mind and by focusing on positive and concrete achievements, and was unable to help Aasha to identify, communicate, and find ways of resolving negative feelings and emotions.

Mr. Riley was an officer in the army and spent regular periods of time away from home. He was a very competent, but emotionally cut off, man; over many years he had faced a succession of traumatic events in which his close peers were maimed, psychologically damaged, or killed.

When Aasha reached adolescence, she began to hate her chronic disability: the cerebral palsy. After her foot operation at 15 years of age, she tried to deny its existence by attaining perfection in her athletic activities. When unable to manage her distress, Aasha secretly began to cut herself.

Around the time that Aasha turned 16, her adoptive father began to suffer from symptoms of posttraumatic stress disorder (PTSD), precipitated by the traumatic death of a work colleague. Over time, Mr. Riley's symptoms worsened. He was unable to work and became essentially housebound. Due to difficulties in obtaining medical assistance from his employers, he became increasingly discouraged about the good will of humanity. Concurrent stresses included Aasha's inability to manage her school work, her being bullied at school, her transfer from one school to another, and the increased athletic commitments that she undertook in order to qualify for an elite team. Aasha became overwhelmed; her sleep began to deteriorate; and she developed pain in her right knee.

Soon after our team's first assessment (shortly after Aasha turned 17), Aasha and the family experienced further negative life events. Mr. Riley's mental state deteriorated to the point where he was struggling with the loss of his professional career and with feelings of self-loathing. Aasha was sexually assaulted by a male friend, who threatened to kill her if she told anyone. She was also subjected to a series of dismissive and derogatory statements from medical staff at her local emergency department, where she was frequently presenting with seizures: "They are false seizures"; "She's faking it"; "Stop looking for attention." These comments made Aasha feel angry and misunderstood.<sup>†</sup> Against this background, Aasha's conversion symptoms reemerged in full force.

**The Treatment Intervention**

Multimodal treatment was delivered during two consecutive, three-week rehabilitation admissions, four months of weekly outpatient therapy (both individual and family sessions), and nine months of telephone follow-up during

<sup>†</sup>Unfortunately, based on the stories told by our patients, these sorts of derogatory comments made by medical and nonmedical staff are common.<sup>3</sup>

Aasha's transition to the private sector. The key components of the intervention are presented below.

**BUILDING A STRONG THERAPEUTIC RELATIONSHIP AND ENHANCING POSITIVE EXPECTATIONS** The overarching aim of the first of the two rehabilitation admissions was to engage Aasha in positive relationships with all team members. Each morning, during the team's ward rounds, we provided Aasha with a paper copy of the day's timetable and discussed objectives for that particular day. Because Aasha did not want to be in hospital and disliked talking about emotional issues, we needed a humorous way to talk about her anger. We built on a joke that had arisen in the family session: "Who from the treating team had the honor of being at the top of Aasha's hit list?" (for working her the hardest). This joke allowed us to maintain a conversation about emotional tasks that Aasha needed to practice, and gave her a sense of power: she could assign strongly negative ratings to anyone who was pushing her, but paradoxically, those same negative ratings communicated to team members that they were doing a good job. With this dual function, the joke helped diffuse the ongoing tension in our relationship with Aasha and allowed all team members to maintain a therapeutic alliance.

**THE MEDICAL MODULE** We reviewed all of Aasha's past investigations and neuropsychiatric/cognitive reports. These data, coupled with our discovery that Aasha was a talented graphic artist, highlighted that we needed to use visual aids—diagrams, pictures, and sketches—to communicate with Aasha. In addition, we always asked Aasha to repeat back any information we provided, thereby checking to be sure that she had understood us. Interestingly, it was not uncommon for Aasha to smile and nod while professionals or teachers were talking even though she reported that her mind was "blank" and that she did not understand the information being presented.

On physical examination, Aasha's heightened physiological arousal was evident in several signs. Her breathing was rapid (typically around 40 breaths per minute) and shallow (using the upper chest muscles but not the diaphragm [intercostals and subclavicular muscles]). Her hands were held in fists. Her right foot was inverted, and she walked on clawed toes at all times, with no right heel strike and poor left heel strike. Despite her reluctance, Aasha accepted our formulation that her body was "revved up" and that this arousal was contributing to her conversion symptoms, pain, and menorrhagia. She agreed to interventions—physical, pharmacological, and psychological—that aimed to decrease her arousal and to decrease the frequency and severity of her symptoms.

**THE PHARMACOTHERAPY MODULE** The aim of pharmacotherapy was to decrease Aasha's physiological arousal and to improve her sleep. We trialed Aasha on fluoxetine 20 mg once a day, but the result was significant nausea, a worsening

of sleep, a subjective sense of agitation, and an increase in the frequency of her non-epileptic seizures. Next we trialed nimodipine, a calcium channel blocker, because the literature suggests that some non-epileptic seizures may be associated with a decrease in cerebral blood flow, secondary to cerebral vasospasm resulting from the hyperventilation.<sup>4-6</sup> Aasha became hypotensive, however, so the nimodipine could not be trialed at a therapeutic dose. Aasha was finally stabilized on quetiapine 50 mg at bedtime and clonidine 25 mcg in the morning, plus 50 mcg at bedtime. This combination of medications functioned to dampen her arousal and to break the cycle of insomnia.

**THE PHYSICAL THERAPY MODULE** Initially, daily physical therapy focused on correcting the in-turned foot position with stretching, positioning, and strengthening exercises. The physiotherapist quickly discovered, however, that when attention was paid to the foot—including verbal instructions to correct her foot position or gait—Aasha's dystonia and positioning became worse. Subsequent interventions ignored the foot entirely and focused on general strengthening and reconditioning. Exercises that encouraged a flat neutral position—stationary bike, cross-trainer, leg press, Swiss/exercise ball, balance exercises, Wii fit boards, and lunging/squatting games—were chosen without Aasha realizing (as little as possible) that she was exercising in a corrected position. By the end of the first admission, Aasha regularly had good left heel strike and was intermittently able to keep her right foot flat in gait and when performing functional activities.

The role of stress was made clear to Aasha's family and the treating team. When training for athletics was reintroduced during the second admission, Aasha's pain skyrocketed, and her dystonia worsened. Aasha was unable to tolerate the demands and stress of such training because she was unable to limit her expectations or train within reasonable limits. She would automatically revert to her old pattern of functioning by setting unattainable goals that required exceptional levels of performance. Aasha's parents decided that Aasha needed to give up participation in competitive sports. After discharge home, the family continued to implement the "indirect" physiotherapy of promoting Aasha's strength and well-being, along with the incidental rehabilitation of Aasha's foot.

**THE EDUCATION MODULE** Aasha was unable to manage the classroom setting. She often did not understand what the teachers were asking of her, and would pretend to do the classwork. This behavior was interpreted as noncompliance by her teachers and resulted in daily conflict.

**THE FAMILY THERAPY MODULE** The individual work with Aasha was embedded in a family therapy intervention that continued throughout the treatment. At the start, our key concern was that the family was at risk of breaking down. Mr. Riley was distressed and unable to leave the house.

Aasha was unable to function without parental support. All the while, Mrs. Riley was attempting to keep the family afloat. This state of affairs was complicated by the long-standing patterns of relating within the family system. All members of the family protected other members from emotional pain by not talking about their own internal struggles. Issues would emerge only when the individual was no longer able to cope, and it was no longer possible to hide that something was wrong. In addition, the family did not perceive that the suffering of one member of the family would affect the well-being of other members, or that childhood experiences could have an impact on current functioning. Because of this difficulty in making connections between events and the emotional impact of these events on individual family members, various events had been disregarded by the family because they were not seen as being relevant. Other events or past experiences were also withheld because the family was especially private. It therefore took time for the family to trust that the team would listen from a neutral and nonjudgmental stance.

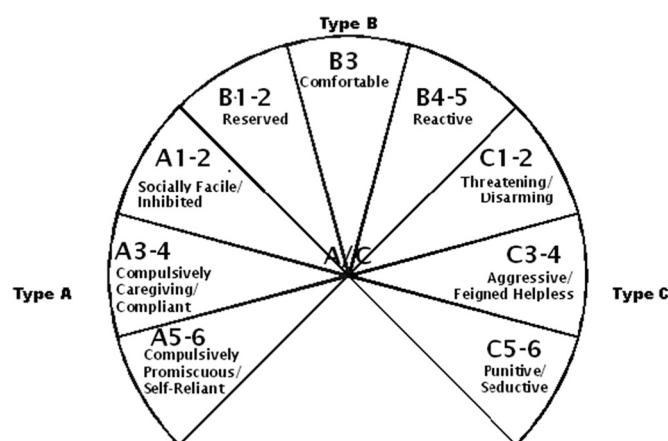
The family therapy focused on the following two interventions. The first involved helping the parents examine the impact of their own emotional difficulties on Aasha's functioning and how these difficulties prevented them from being able to provide Aasha with emotional support. Addressing this issue included (1) a systems intervention by Mr. Riley's treating team to ensure that he was receiving adequate treatment for his PTSD (care that included a combination of pharmacotherapy and psychological interventions), (2) enabling Mrs. Riley to prioritize her own emotional well-being rather than putting it entirely aside to look after Aasha and Mr. Riley, and (3) exploring how childhood experiences may have contributed to each parent's emotional functioning. The second intervention was to increase the family's communication about emotional issues (which they normally avoided), to increase each member's tolerance for emotional distress, and to increase their sense of connection with each other. These two interventions helped Mr. and Mrs. Riley provide Aasha with practical and also emotional support.

**THE INDIVIDUAL THERAPY MODULE** The individual work with Aasha involved four stages: assessment, daily psychotherapy as an inpatient, weekly psychotherapy as an outpatient, and telephone sessions during the handover period. A transition to adulthood attachment interview (TAAI) in the assessment phase helped the team to better understand Aasha's emotional functioning.<sup>6-8</sup> The TAAI suggested the following. (1) Aasha dismissed and was preoccupied with unresolved trauma in relation to abandonment by her biological mother; Aasha pushed this information out of mind, but it intermittently intruded. Whether it was omitted or whether it intruded, the information affected her current behavior. (2) Aasha experienced preoccupied, unresolved trauma in relation to her cerebral palsy; Aasha

had not come to terms with her disability, and ruminated about it frequently. (3) Aasha used a mixed compulsive performance (Type A4<sup>-</sup>) and self-reliant (Type A6) attachment strategy (see Figure 1).

Compulsive performance (Type A4<sup>-</sup>) referred to Aasha's drive to succeed in sporting and academic activities. Unlike the many children for whom performance primarily functions to obtain parental approval, in Aasha's case it was also generated by her need to overcome her disability, so that she would not be different from other children. The self-reliant (Type A6) component of the attachment strategy referred to how Aasha dealt with her emotional life. At no point in the interview had Aasha focused on the emotional connection with her parents or on how she went about obtaining protection and comfort. Instead, most of Aasha's examples reflected connection through action. She told the interviewer about activities that she had done with others, or she described how she—or more accurately, her body—had been looked after, as when her parents did physiotherapy on her foot. Aasha often omitted herself from sentences, and there was little sense of Aasha as a person.

Aasha's use of a Type A attachment strategy—children using the Type A strategies are good, compliant children—helped us see her resistance to the program, her refusal to talk about body states and emotions, and the teacher's complaints about her “noncompliant” behavior in the classroom in a different light.<sup>6,7,9</sup> We realized that Aasha's



**Figure 1.** Dynamic-maturational model of attachment depicting different patterns of information processing—which are also known as *patterns of attachment* or as *self-protective strategies*. The normative patterns of attachment (Type B, Type A1-2, and Type C1-2) are depicted in the upper part of the circle, and the non-normative patterns (Type A3-6 and Type C3-6) in the lower part of the circle. The Type A4<sup>-</sup> attachment strategy (compulsive performance) is a less intense form of Type A4 (compulsive compliance) and involves the child inhibiting displays of negative affect, taking the attachment figure's perspective, and behaving in ways that will elicit the attachment figure's love and approval. Type A6 (compulsive self-reliance) refers to individuals who inhibit displays of negative affect and who withdraw from close relationships because these have failed to be a source of comfort and protection. Figure printed with permission from Patricia Crittenden.

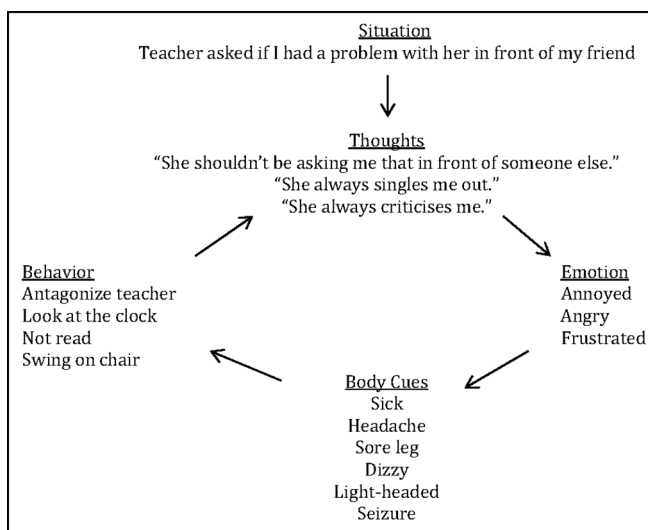
apparent resistance reflected her anger with the manner in which medical professionals had treated her in the past, her anxiety about disclosing information that was emotionally painful, and her cognitive limitations. If we were able to engage her and to earn her trust, she was likely to comply with the program and to work with us in a collaborative way. The team therefore used the approach of “rolling with resistance,”<sup>10</sup> where we all just persevered with strengthening the therapeutic alliance and with implementing our interventions, knowing that with time, Aasha was likely to make a shift in her thinking or behavior.

The primary goals for the second stage of the individual psychotherapy therapy were to enable Aasha to pay attention to, and identify changes in, her body state; to articulate the full range of normal emotions and associated bodily sensations; and to attend to memories of distressing events. Additional goals were to help Aasha notice how intrusive images and changes in body states were associated with her non-epileptic seizures and to enable her to decrease their frequency and intensity through use of a broad range of mind-body techniques.

The therapists found that Aasha was able to identify the negative thoughts—“I’m not as good as them,” “I’m going to fail,” “Everyone will think I’m stupid”—but resisted the notion that her thoughts could affect her emotions and that her seizures could be connected to her emotions. Indeed, she explicitly avoided connecting with her body, lest it stop her from “getting on with things.” In line with the team’s hypotheses, it became clear that Aasha hated her body and had learned to “cut off” pain or discomfort from her body in order to compete in sporting events and to feel “normal.” She therefore found it difficult to attend to a wide range of body cues. Aasha also expressed her belief that “emotions were stupid, and there was no point having them,” making it difficult for Aasha to engage in psychological therapy since she was unable to see the benefit of connecting with either her body or her emotions.

In addition, Aasha was unable to articulate a clear sense of self: she did not know who she was except by complying with social expectations (such as dressing in the same way as her friends). This undeveloped sense of self was linked to her constant need to seek reassurance. In one session Aasha was asked to complete a pie chart with the different aspects that made up Aasha. After filling in about 60 percent of the chart as “cerebral palsy,” she was unable to identify anything else.

During her stay in the hospital, Aasha experienced several stressful events that Aasha’s therapists were able to use to their advantage. Following the conflict with teachers in the hospital, Aasha would often experience intense emotions and non-epileptic seizures, which provided Aasha an opportunity to reflect on the connection between her body and emotions. With Aasha’s help, and using a cognitive-behavioral visual formulation, the therapists tracked what had occurred during these events (see Figure 2): When in



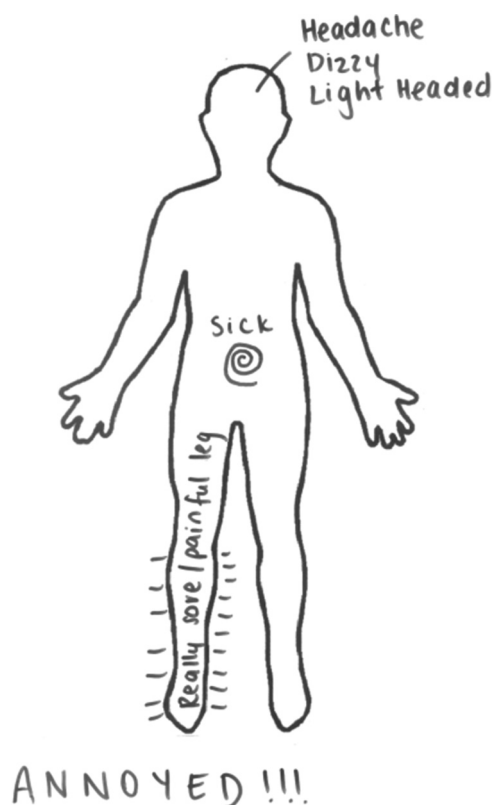
**Figure 2.** Sequence of Aasha’s thoughts, feelings, and physiological symptoms and behaviors.

the sequence of events did Aasha begin to experience stressful thoughts? When did she begin to experience nausea and headache? When did these somatic symptoms give way to dizziness, shaking, and a non-epileptic seizure?

Body maps were also utilized to help Aasha connect her emotional states to her bodily symptoms in order to strengthen her association between her emotions and body (see Figure 3). After repeated sequences were depicted concretely on paper and recorded on daily monitoring forms, Aasha was able to consider the idea that her body—non-epileptic seizures included—was connected with stressful events, negative thoughts, and emotions.

In addition, the therapists worked with Aasha to try to help her monitor her body. It became clear that Aasha was unable to register changes in body arousal. For example, she seemed unable to feel whether she was using abdominal breathing or not, and her therapists had to resort to visual and tactile cues to assist her to change her breathing pattern—such as seeing the rising and falling of her chest in a mirror, or putting her hands with fingertips touching on her stomach and feeling her fingers separate and come together. Interestingly, whenever Aasha did slow her breathing to ten breaths a minute, she became physically uncomfortable—nauseous and light-headed. Not surprisingly, she was consequently reluctant to practice controlled breathing. After considerable coaching—so that her breathing rate was decreased slowly over many weeks—Aasha was able to achieve two minutes of slow breathing without negative symptoms. By the end of her second hospital stay Aasha was consciously able to recruit her diaphragmatic breathing to control her respiration.

Aasha began the third stage of the individual therapy module—weekly outpatient therapy—following her discharge from the second rehabilitation admission. By that time her health had stabilized: she returned to college



**Figure 3.** Body symptoms when Aasha is annoyed.

part time, took part in noncompetitive sporting activities and social activities, continued her physiotherapy program at home, independently managed her non-epileptic seizures (now occurring briefly only about four times per week), and used quetiapine 50 mg at bedtime and clonidine 25 mcg in the morning and 50 mcg at bedtime to maintain a good sleep cycle and to help dampen her physiological arousal. Aasha's dystonia had improved significantly but had not fully resolved.

Two weeks after Aasha was discharged from hospital, and two months into treatment, she began experiencing nightmares and intrusive daytime images about her recent sexual assault. Because Aasha lacked confidence in her own perspective, she asked her abuser to confirm the veracity of her memories, which he did. After unsuccessfully trying to manage the memories on her own, she eventually disclosed them to her mother—which shook her family to the core. From the time of the disclosure, the family began to talk more openly about a range of problems that had previously been undisclosed, and Aasha's history, as detailed at the outset of this case presentation, could finally be filled out.

Following her disclosure, Aasha experienced significant decline in her mood; her sleep deteriorated; she became increasingly irritable; and she found it difficult to concentrate in college. Her dystonia reemerged intermittently and

although there was no increase in the frequency or intensity of her seizures, they were triggered when Aasha experienced visual memories of the sexual assault. Mirtazapine 30 mg at bedtime was added to treat these PTSD symptoms.

In therapy sessions, Aasha was reluctant to discuss the assault or its aftermath. She said she was trying to block out the memories because they distressed her. Eventually, she began to draw pictures of what had happened to her. Although Aasha despised attending these outpatient sessions, her seizures and dystonia resolved.

After six months of individual therapy, the therapists considered her sufficiently stabilized and ready for the fourth stage of individual therapy, which involved telephone sessions during the transition period to a private therapist. Many issues remained unresolved and needed to be addressed: Aasha's poor adjustment to her cerebral palsy, her experience of adoption, and her perfectionism and need to perform. These last demands were the means by which she could feel good about herself and also satisfy her adoptive mother's wishes and expectations, thereby obtaining her acceptance and approval. Because the family members were now more aware of their patterns of relating to each other and of protecting each other from their own distress, they were also referred to a family therapist to continue working through these relational issues.

### Outcome

Eleven months after her discharge from hospital, Aasha had completed her graphic arts course at college, was working as a swim coach, and was involved in numerous structured activities—swimming, archery, and an adolescent support group. She was seeing a psychologist regularly. She occasionally experienced a non-epileptic seizure and episodic dystonia when she was stressed. Nine months after discharge from our service, Aasha's father was still struggling with PTSD, and the family's emotional temperature remained high. In collaboration, Aasha and her parents were able to acknowledge this stress and to work out a solution. Aasha moved in with her adoptive grandmother, which provided some space and motivation for her father to address his PTSD. The move also served as a stepping stone for Aasha to achieve one of her own goals, that of becoming more independent in terms of self-care skills. Three months later Aasha moved back with her parents.<sup>‡</sup>

### QUESTIONS TO THE CONSULTANTS

1. How did Aasha's health problems and risk factors function in her life context?
2. What role did Aasha's cognitive deficits play in the evolution of her conversion symptoms? What was the significance of Aasha's disclosure of sexual assault?
3. Could a unifying model explain Aasha's symptomatic presentation with conversion symptoms, including

psychogenic non-epileptic seizures? And how does one explain Aasha's favorable outcome?

## RESPONSES OF THE CONSULTANTS

### Andrea Landini, MD

The following discussion will focus on (1) asking questions about how Aasha's individual functioning interacted with her family and social environment, (2) identifying ways to gather information relevant to these questions, and (3) retrospectively identifying developmental turning points that could have been targets of assessment and intervention.

The theoretical framework used in this discussion is the dynamic-maturational model of attachment and adaptation (DMM),<sup>7,9,11</sup> a biopsychosocial model of how protection from danger is a focus of human organization (see Figure 1). Human behavior and mental information processing are seen in the DMM as organized strategically toward survival and reproduction. Individual differences in behavior (and associated mental processing) are related to developmental pathways shaped by the experience of seeking protection and comfort. This development occurs in the context of attachment relationships, and the patterning of attachment relationships can be used as a critical predictor of how humans will respond to threats to their safety and reproductive potential.

The DMM is the theoretical basis of the Transition to Adulthood Attachment Interview,<sup>12</sup> used by the treatment team to explore the strategic meaning of Aasha's behaviors. The DMM guides the interpretation of the subject's discourse as an indicator of how the mind of the subject functions strategically. According to the model, the strategies of different family members—also known as *self-protective strategies* or *patterns of attachment*—can be considered in their systemic interplay, allowing the formulation of testable hypotheses on how a family would provide protection and comfort to its individual members.

An analysis of Aasha's current strategy points to a crucial point: she shows evidence of having unresolved issues about the abandonment by her biological mother. This event is treated alternatively as unimportant (Aasha dismisses its effect) or important (so that it intrudes in discussions of other topics by spurious over-association). We might expect Aasha's adoption at birth to have had some protective effect on her relationships with her adoptive family.<sup>13</sup> In fact, she cannot have experienced any abandonment in ways that could have been encoded verbally or episodically. We can therefore attribute current unresolved issues on this topic to her other social interactions and communications, especially with her attachment figures, the adoptive parents.

Relevant questions include the following: What was the parents' reason for choosing to adopt? Were there

unresolved losses or traumas for them—for example, related to reproduction or to other significant relationships—that could have contributed to how their relationship with Aasha developed? We do find in the history some mention of mother's childhood illness, but we do not have evidence that this experience actually caused a traumatic psychological response (although this possibility is rendered more likely by the mother's subjective report that she finds it difficult to care for Aasha as a consequence of her own experiences). The mother's status could have actually have been assessed with an interview probing representations of attachment relationships, such as the DMM–Adult Attachment Interview<sup>14</sup> or other similar assessment—potentially even before the adoption itself—but such assessments are not administered routinely.

Aasha's situation warranted special attention, however, because of the important risk factors tied to a premature and complicated birth. These require additional effort from caregivers, as preterm babies are at biological risk, often irritable and difficult to soothe, and at times also not readily responsive to interpersonal stimulation.<sup>15</sup> In view of the difficulties in arousal regulation and somatic awareness shown by Aasha in adolescence, we can retrospectively hypothesize that the neonatal period was problematic for Aasha and her adoptive parents. We can speculate further that negative affect was so threatening for Aasha's adoptive mother (as she finally reported herself) that her only way to deal with it was to ignore it. Since this strategy would preclude resolving the problems signaled by negative affective displays, we would expect many of the stressors in Aasha's family to have been ignored and therefore to have become chronic. Such an interpretation coheres well with the case history—with Aasha's omission, inhibition, and falsification of negative affective information and, more generally, with the finding that she had developed a Type A self-protective strategy (see Text Box 1).

A way to assess whether Aasha's early interactions actually fit this hypothesis could have been to use a video-based observation of interaction, such as the CARE-Index,<sup>8,16,17</sup> during the first year of life and perhaps even thereafter. This sort of screening for relational and psychosocial risk might have allowed Aasha's family to be helped both with the special features of the infant and with the vulnerabilities that the adults brought to the interaction.

Another important piece of evidence coming from Aasha's current strategic functioning is the lack of resolution about her cerebral palsy, which preoccupies her mental functioning but, in terms of adaptive action, only produces compulsive attempts at hiding the evidence of the disability—either by omitting it from mental processing altogether or by producing incompatible evidence (i.e., excellence in athletics). This same pattern might be extended to the way that Aasha appears to use her cognitive abilities (i.e., pretending to function well and not coming fully to terms with her capacities and limitations). Through her own somatic, affective, and

<sup>†</sup>The case history was prepared by Catherine Chudleigh, Kasia Kozłowska, Kavitha Kothur, Fiona Davies, and Holly Baxter.

cognitive experiences, Aasha has been familiar with her motor and cognitive performance during most stages of her development (notably, beginning with toddlerhood and the motor maturation at that stage), and she is mentally preoccupied by this information at the time of assessment. But what are her dispositions to action? The strategies that she is shown to use are either compulsive performance (which involves others only as evaluators or judges) or self-reliance (which does not involve others at all, based on predictions of others' responses as neglectful or as dangerously rejecting).

How good or bad was Aasha's experience with rehabilitative treatments during her childhood? In addition to the information from her recent assessment, we have reports from the mother, who found the process of assisting and supporting Aasha a difficult one, especially in terms of dealing with the negative emotions involved. We also know that Aasha was recently not willing to cooperate with medical treatments offered, and that she connects this attitude with how her displays of distress and suffering have been verbally labeled and considered. Overall, attention has been given to supporting Aasha's cognitive performance and physical rehabilitation, whereas the negative affective information communicated by Aasha has been ignored, set aside, or punished. This history seems to have shaped Aasha's current functioning, for she treats information about her distress and about what her body is saying to her in exactly that way.

Could Aasha's disregard or dismissal of such information have been recognized and counterbalanced during the rehabilitation interventions carried out in Aasha's childhood? It probably depends on two factors: (1) whether the rehabilitation could have focused on specific motor and cognitive goals, rather than on more diffuse, broadly defined goals, with a view to Aasha's acquiring the skills associated with the ongoing progression of age-appropriate developmental tasks, and (2) whether Aasha's caregivers could have extended their interactions with her to encompass attention to Aasha's distress.

This last point about her (adoptive) parents' functioning—deficits in their psycho-physical health, emotional availability, and capacity to support a normative self-protective (attachment) strategy—is already a recurrent one in this discussion and might well be considered the likely early predictor of Aasha's future problems. The special features that Aasha brought to her relationship with her parents were undoubtedly complex to deal with. However, her failure to organize—that is, to establish as relatively stable and ongoing—a compulsive strategy of caregiving or compliance with her parents indicates that the problems that prevented the parents from being comforting and protective went way beyond Aasha's ability to enhance or draw out her parents' resources. In these terms, another area of family functioning that plays a role in this case history is the spousal subsystem: was Aasha forced to a compulsive self-reliant strategy because the parents were not functioning as a couple and were therefore distressed by factors beyond Aasha's influence? Or

were they so tightly intertwined in protecting and comforting one another that their relationship was closed to letting a child in? Or what other pattern did their spousal attachment take? This factor might have been assessed early as part of the adoption preparation, or when it was known that the child had a neurological condition, or during Aasha's rehabilitation; the projected stresses on the family would have justified a review of its strengths and weaknesses, and of whether it was capable in the way needed to support Aasha. A crucial challenge in assessing the family would have been to determine the presence of false-positive affective displays that are part of Type A self-protective strategies. Mrs. Riley's likely Type A functioning—dismissing negative affect, constructing a nonproblematic appearance, falsifying positive affect (e.g., smiling in the face of adversity)—might easily have been misinterpreted as adequate adaptation. Indeed, the function of the Type A strategies is to hide evidence of problems in order to avoid undesired interpersonal repercussions.<sup>11</sup>

From the history, it appears that a major watershed on the pathway to Aasha's seizures (and their impact on her sense of self) was the surgical equinus correction. After the surgery, Aasha started focusing on athletic training and competitions, which are later characterized as attempts to "erase" her body, presumably with its imperfections. Therefore, this activity might be interpreted as not fulfilling in itself—that is, as not bringing personal satisfaction to Aasha. The following months witnessed the whole family becoming increasingly distressed. Nonmedical explanations for the seizures were not sought by the family, and Aasha refused psychological help. What finally allowed for the treatment described here to proceed was the parents' threat to stop supporting Aasha and her activities—an ultimatum that itself followed the school's pronouncement that it could no longer manage Aasha. Only at that point did Aasha accept a treatment approach that was not solely aimed at the body.

The questions arising from this sequence of events are the following: What motivates Aasha's behavior of dismissal (or even denial) of difficulty or distress? Is it a personal or a family issue? Since she obviously cannot leave her body behind (as one might decide to stop seeing an acquaintance), is it possible that Aasha might somehow feel that, by eliminating all external evidence of her disability and imperfection, she might remove a source of pain and discomfort for the family and thereby serve to stabilize it? What were the expectations regarding the surgical correction of the right foot? It might have been possible to get some answers to the preceding questions around the time of the surgery itself. That is not to say that vulnerabilities such as those associated with the father's PTSD would have been easy to uncover, but the surgery might have served as an opportunity to probe the family's expectations for the surgery itself and how those expectations may have been grounded in the family's interpersonal dynamics.



Given Aasha's functional and developmental limitations, she could likely still benefit from her family's support. A move toward independence is certainly developmentally appropriate, but the crucial question—not yet addressed—is how Aasha is to learn to regulate arousal interpersonally to achieve comfort? She is not yet part of a peer network, and she does not have intimate relationships with best friends or sexual partners. She has therefore not managed some crucial adolescent developmental tasks. Her current self-protective, or attachment, strategy suggests that the relationships with her parents did not allow for this set of skills to develop. Were her parents ever in a condition to provide appropriate support for Aasha's emotional development? Does their current level of distress encourage Aasha to turn away from them? Does their current level of functioning allow Aasha to turn to them for comfort and protection?

Actually, Aasha's desire for comfort (currently denied any interpersonal expression by her self-protective strategy) might be a factor functionally contributing to her somatic complaints, which are currently decreased but still substantially impairing. Some issues regarding Aasha's options—in terms of finding comfort in intimate relationships outside the family—are raised by the sexual assault incident. Does Aasha share with her family any implicit or explicit belief or rule about physical intimacy and sexuality? Her problems in the very recall of the event suggest how hard it was for her to conceptualize both what happened and that it really happened to her. What was so hard for Aasha to represent? The sexual nature of the assault, or the needs for comfort that this experience raised? Is Aasha's body (described by her as "60% cerebral palsy") considered by her and her family compatible with sexuality and comfort? Indeed, her family is reported to be "shaken to the core" by Aasha's disclosure of her sexual abuse experience; subsequently, the parents opened up enough to communicate negative events and feelings related to their own history. The extreme, sex-related danger that Aasha experienced was able, it seems, to release the parents from their strategy of dismissing negative affective information.

In view of the above, family treatment sessions should potentially explore issues regarding the integration of attachment (protection and comfort) and sexuality (reproduction): How do the parents deal with such matters within their own relationship? Is there any possibility that the parents can help Aasha with this important developmental challenge and the associated set of developmental tasks? What are the alternate resources that Aasha might potentially access for help, and without losing access to what her parents can contribute in terms of her growth and support? Assessment of the self-protective strategies of all family members—as suggested earlier—would help provide answers to these questions and also, more generally, provide the groundwork for a formulation concerning the family's problems and how to address them.<sup>14</sup>

### **Philip Hazell, BMedSc, MBChB, PhD, FRANZCP**

Because of the obvious challenges to conducting epidemiological research about conversion disorders in children (such as the need to thoroughly exclude physical pathology), our knowledge is limited to case series and case reports. Nevertheless, there is accumulated clinical wisdom about conversion disorders in children and adolescents. Aasha's case "ticks the boxes" for many of the factors known to characterize conversion disorders.<sup>18,19</sup> She is female. She has concurrent physical morbidity in the form of cerebral palsy and its complications. She also has a psychiatric comorbidity in the form of PTSD. Cerebral palsy, as well as cognitive impairment, is associated with an increased risk for mental health problems. Aasha has experienced a range of psychosocial stressors, but perhaps the cardinal one is sexual assault. In one case series of children and adolescents with non-epileptic seizures, one third were reported to have been sexually assaulted.<sup>19</sup> Non-epileptic seizures are associated with a prolonged course of illness relative to other forms of conversion disorder. A final factor is that both of her adoptive parents experience difficulty in resolving emotional issues. These features reflect the nomothetic aspects of the case, whereas the true value of a case discussion is to examine the idiographic features. To paraphrase Tolstoy, "Happy children are all alike, each unhappy child is unhappy in his or her own way."

Aasha has cognitive deficits for which she received remedial therapy throughout childhood. She has deficits in verbal comprehension and also problems with executive functioning, leading to cognitive inflexibility. With these deficits, coupled with her low-average IQ, Aasha would presumably have struggled in a mainstream school, especially as she moved into the upper grades. It is likely that her highly motivated parents organized additional tutoring and that she intermittently received special help in the classroom. As indicated in the case history, Aasha's cognitive deficits rendered her vulnerable to stress and impaired her capacity to adapt to change, possibly through the pathway of poor problem-solving skills. It is also possible that Aasha's perception of events has been distorted. She is likely to have been very concrete in her thinking. Aasha's cognitive deficits invite speculation that faulty information processing has contributed to the genesis of her conversion symptoms. As reviewed by Kozłowska,<sup>20</sup> from the 1970s cognitive theorists have proposed models that attempt to explain both positive motor conversion symptoms such as non-epileptic seizures and negative conversion symptoms such as paralysis. These ideas began with Hilgard's neodissociation theory and were further developed by Oakley's attentional control model and Brown's cognitive model. In the most recent refinement of these cognitive models, motor conversion symptoms are seen to be an automatic activation of stored behavioral repertoires that have been triggered by the products of attentional selection. Conversion symptoms reflect the selection of erroneous information generated as part of automatic analysis of

sensory data. As Kozłowska also notes,<sup>20</sup> these models have weaknesses, including the absence of clear neuroanatomical correlates. Nevertheless, it is tempting to think that Aasha's executive function deficits, which would be localized in the dorsolateral prefrontal cortex, may be associated with some level of attentional-processing deficit. Similar deficits have been identified in other young people with cerebral palsy.<sup>21</sup>

Aasha's cognitive deficits may also have exerted an impact on her response to treatment. We do not know how Aasha reacted to the first suggestions by her physicians that her symptoms may be psychogenic. It is clear, however, that she rejected outright the first attempts to engage her in psychiatric treatment, and she remained averse to contemplating psychological explanations for her problems. What finally motivated Aasha to accept the option of treatment was her parents' ultimatum—"If you don't do A, we won't do B"—a maneuver that engaged Aasha's concrete thinking. In individual therapy Aasha struggled to engage with emotional and interpersonal material, and focused on actions. She demonstrated the mentalization of a child in the prepubertal stage of development. The individual therapist was persistent, however, and by working with Aasha to improve her capacity to monitor bodily states, she achieved a reduction in conversion symptoms. This change suggests to me the principal of anticipation: Aasha had the cognitive capacity to attend to bodily states and physical phenomena, but had been unable to bring this capacity "on line."

Aasha was the victim of a sexual assault between the time that the psychiatry team conducted their first and second assessments, but she did not disclose this information until deep into her treatment program. Many readers will identify with this situation. A patient reveals a trauma (typically sexual) long after the event and only after a therapeutic relationship is well established. Given the known association between conversion disorders (non-epileptic seizures, in particular) and sexual trauma, the treating team almost certainly screened for this possibility during the initial assessment. Even if the assault had taken place prior to the first assessment, it is unlikely that Aasha would have disclosed her trauma—or any other trauma—at that point. She was angry, resentful at being referred to the psychiatry team, and refusing to answer most questions. Clinicians confronted with this type of situation typically ask themselves the question "Had I known this sooner, would I have done things differently?" Certainly, the treating team, had they known about the assault at the time, would have taken steps to ensure that there was no risk of recurrence and would have cooperated with any forensic investigation that was required. Aasha would have been referred to specialized sexual services for counseling. The comprehensive multimodal treatment program directed to conversion symptoms may have been disrupted while sexual assault counseling was in progress: first, because it would have been overwhelming for Aasha to manage the two

treatments concurrently, and second, because her conversion symptoms may possibly have resolved once Aasha had been helped to address her posttraumatic symptoms. As it stands, Aasha did not disclose the trauma until her inpatient rehabilitation program was complete. What alerted the treating team to the trauma was the substitution of conversion symptoms with symptoms more typical of PTSD. The disclosure also facilitated the unpacking of other family-dynamic issues that had not previously been accessible.

One could interpret events as follows. The accumulation of stressors culminating with a sexual trauma led to the emergence and exacerbation of conversion symptoms in an adolescent who was vulnerable by virtue of her existing physical disabilities and her impaired attentional processing. Her cognitive inflexibility rendered it difficult for her, especially at the outset, to engage in any form of treatment and to disclose intimate material such as the sexual trauma. The sensitive, persistent support of the multimodal treatment team enabled Aasha to become more conscious of her bodily sensations and also to attend to emotional phenomena. As a result, Aasha's symptoms transitioned from the physical to the psychological, and she was able to access previously unavailable material, including the sexual trauma that had been suppressed. This transition occurred late enough in the treatment process not to derail the multimodal program that had successfully managed the conversion symptoms. One lingering doubt remains. Clinical experience has taught me that people are selective in reporting their sexual trauma experiences. One sexual trauma (typically the least severe) will be revealed, whereas other, more severe or enduring traumas remain concealed.

#### **Gaston Baslet, MD**

Not uncommonly, conversion symptoms represent the entry door to a complex medical and psychiatric history. In psychogenic non-epileptic seizures (PNES), a combination of predisposing, precipitating, and perpetuating factors are likely to render the patient vulnerable to the final phenotypic expression of the disease. In Aasha's case, a lifelong history of intellectual limitations, emotion dysregulation, interpersonal difficulties, and cognitive inflexibility, coupled with an avoidant style of relating to her emotional processes, put her at increased risk for conversion. Many of these risk factors are well established in PNES individuals.

For instance, it has been suggested that PNES can be relatively common in individuals with intellectual disabilities (ID).<sup>22</sup> In a study sample from a PNES clinic, 9.4% of patients had ID, although this sample does not include patients who present to residential facilities rather than outpatient clinics, making the proportion of PNES subjects with ID probably higher. This same study identified a specific profile in PNES individuals with ID, including lower rates of sexual abuse and higher rates of comorbid epilepsy, thus suggesting different mechanisms leading to PNES in

this subgroup.<sup>23</sup> An avoidant style has been documented in PNES patients,<sup>24,25</sup> and a recent experimental study confirmed an increase in avoidance tendencies when PNES subjects are faced with social-threat cues.<sup>26</sup> In regard to emotion regulation, individuals with PNES have been grouped based on their trait emotion-processing style, with both an underregulated type and a hyperregulated type.<sup>27</sup> It is possible that each subject has one predominant emotion-processing trait, but over time, patients oscillate between feeling highly emotional and feeling distant from their emotion processes. Finally, cognitive inflexibility is considered an executive dysfunction and may either reflect personality traits, such as obsessive-compulsive or overly controlled personalities (which rates are relatively high in PNES study samples)<sup>28,29</sup> or be secondary to cognitive dysfunction, also identified in PNES patients.<sup>30</sup>

It was not until Aasha was confronted with many precipitating factors that the final PNES symptomatic expression took place. These precipitating factors included school bullying, increasing academic demands, her father's PTSD, her own health problems secondary to cerebral palsy, and her adoptive parents' inability to provide Aasha with the psychological tools and support needed to survive the crises she was facing. Aasha was not equipped to effectively manage these stressors, and she dealt with them in the only way that she knew: by avoiding her rising, poorly modulated emotions.

Seventy-five percent of PNES subjects identify traumatizing events of varying nature in their lives, including sexual abuse, physical abuse, health-related trauma, and bullying.<sup>31</sup> These events may be present in the patient's remote past or may be relatively proximal to the onset of conversion symptoms. Even in the absence of such clear-cut traumatizing events, from a developmental perspective adolescents with physical and intellectual disabilities not uncommonly face increasing emotional distress as they transition into young adult roles, at which point their limitations become more evident. Such developmental challenges trigger psychological distress that can come to be expressed in psychiatric symptoms such as a depressive syndrome.<sup>32</sup>

In Aasha's case, one can speculate that the factors precipitating her PNES include an emotion-processing style that was "put to the test" while she faced several developmental and acute stressors; her PNES can be conceptualized as the prototyped expression of her avoidant, emotionally dysregulated style. In other words, as Aasha tried to push any negative emotions out of awareness, many of her motor and cognitive functions disengaged from a fully functional and integrated model (symptomatically expressed as drowsiness, inability to speak, motor symptoms), and she remained dissociated for a limited amount of time during each seizure-like event. This PNES model has been described<sup>33</sup> and is, in part, supported by the high rates of psychoform and somatoform dissociation observed in PNES.<sup>25,34,35</sup>

Finally, the lack of validation by medical staff—in her previous medical encounters—can be conceptualized as a perpetuating factor that maintained an already dysfunctional dissociative system. By contrast, the multimodal approach described in the case history includes several treatment modalities that facilitated Aasha's eventual recovery. It is difficult to identify a single mechanism that specifically facilitated improvement. Undoubtedly, an empathic and validating environment played a pivotal role, allowing Aasha to set the pace of her recovery. Her eventual agreement to treatment was the first sign that she was, albeit reluctantly, allowing herself to create a new relationship with her physiological experiences, including her emotional states.

Evidence-based treatments that have shown efficacy in PNES are limited. One randomized, controlled trial of cognitive-behavioral therapy against standard medical care showed significant reduction in the frequency of seizure-like events following treatment.<sup>36</sup> Other uncontrolled trials for cognitive-behavioral therapy have also shown some promise.<sup>28,37</sup>

While there are no clinical trials for mindfulness-based therapies in PNES, such approaches may seem fitting for this population. This hypothesis is based on the premise that avoidance tendencies decrease as patients learn to redirect their attention to target objects, including their own physiological experiences and uncomfortable emotions and thoughts, and as they develop an accepting attitude that eventually allows such phenomena to coexist rather than to be compartmentalized and avoided.<sup>38</sup>

Although the treatment described in the case history was not framed as a mindfulness-based therapy, it is reasonable to hypothesize that the cultivation of mindfulness skills and attitudes toward emotions and thoughts, coupled with behavioral training to regulate responses to new (or newly identified) experiences, could have constituted the active therapeutic ingredient of the treatment. Both Aasha's daily inpatient psychotherapy sessions and weekly outpatient psychotherapy sessions incorporated many of the core elements usually fostered in mindfulness-based interventions. Even during the physical therapy module—as attention was broadened to include newer and more effective positions, rather than trying to "correct" the dystonia—the psychogenic posture gradually improved. The development of new behavioral strategies is a fundamental piece of treatment to help replace previously ineffective and automatic behavioral responses, which is one way that PNES may be framed.

In conclusion, in the model presented here, PNES and other conversion symptoms are the final expression of long-term vulnerabilities when confronted with specific developmental or acute stressors. A skills-based treatment intervention that addresses such vulnerabilities will potentially relieve symptoms, enable patients to better manage the precipitants of such symptoms, and render patients less likely to experience such symptoms in the future.

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