"Scratching" beneath the surface: An integrative psychosocial approach to pediatric pruritus and pain

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Abstract
Pruritus is prevalent in children with atopic dermatitis and associated with effects on mood, quality of life, sleep, scholastic performance, social and family functioning. In this study a 7-year-old African American female with severe atopic dermatitis, itching and pain refractory to multiple systemic and topical medications was referred for treatment. At baseline, the patient scratched to the point of bleeding, despite maximal doses of anti-histamines, antidepressant and topical therapies. The patient became progressively shy, anxious, and her scholastic performance suffered. A literature review prompted the implementation of a multi-modal program of family cognitive behavioral therapy, imagery, aromatherapy, drawing, and biofeedback. The results were that decreased itch, scratching, pain, and anxiety were seen within the first month. Fewer lesions and episodes of bleeding were observed with almost complete skin clearance by the fourth month. The article concludes that a short-term, integrative program including psychological, complementary and alternative medicine (CAM), and medical therapies may represent a novel, efficacious approach for children suffering from severe atopic dermatitis.

Keywords
atopic dermatitis, chronic pain, complementary and alternative medicine (CAM), integrative psychotherapy, pruritis or itch

Atopic dermatitis (AD) is a relatively common, chronic, and debilitating skin disorder whose etiology is thought to involve hereditary, environmental, and psychosocial factors (Habib & Morrissey,

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1999). While it is not considered causal, psychological stress is accepted as an important factor in precipitating or exacerbating the condition, with symptom severity increasing in relation to interpersonal and family stressors (Jafferany, 2007). Pruritus is prevalent in children with AD, often difficult to treat, and associated with effects on mood, quality of life, and self-esteem (Gil et al., 1987; Habib & Morrissey, 1999; Jafferany, 2007; Schachner, Field, Hernandez-Reif, Duarte, & Krasnegor, 1998). Itching can lead to sleep disturbance (Chamlin, Frieden, Williams, & Chren, 2004), distress, poor scholastic performance, and impaired social functioning (Fennessy, Coupland, Popay, & Naysmith, 2000; Levenson, 2008), as well as chronic scratching. The latter behavior can be difficult to discourage, worsen symptoms, and lead to disfiguration of the skin (Cyzewski & Lopez, 1998).

Psychosocial stress is an important factor in the pathogenesis of AD as well as a consequence of the condition, and can increase scratching behavior (Beltrani & Boguneiwicz, 2003; Fennessy et al., 2000; Habib & Morrissey, 1999). Integrating treatments that address psychological factors are tailored to the preferences and developmental stage of the child, and those that involve the parents are more likely to be effective for children with AD (Ersser, Latter, Sibley, Satherley, & Welbourne, 2009; Gerik, 2005).

Case

We describe the case of a 7-year-old African American girl, "Maya," who presented with severe atopic dermatitis resulting in uncontrollable itching and pain refractory to multiple systemic and topical medications. This case is notable in that, unbeknownst to the treatment team, Maya's mother discontinued all medical treatments within the first six weeks of the integrative approach described below. Additionally, this treatment was characterized by multiple interruptions and cancellations, profound family conflicts, as well as financial and other social stressors. As a result, Maya's treatment consisted of nine sessions over the course of four months, with three follow-up sessions at three, four, and five months after the treatment period.

Maya was referred to the director of the Pediatric Pain Medicine and Palliative Care Program (JMS) by her dermatologist in June of 2009 following a number of unsuccessful attempts to control her pruritus and accompanying pain with antihistimines (hydroxyzine, diphenhydramine, cetirizine), an antidepressant (doxepin), an anticonvulsant indicated for pain (gabapentin), as well as a number of topical emollients and steroids. Although Maya first developed periodic eczema at around 18 months of age, her mother said this usually diminished during the summer months. Two years prior, around the time of her parents' separation, Maya's AD and pruritus progressed to becoming a "year-round" problem. At the time of consultation, Maya scratched "even in her sleep," often times to the point of bleeding, despite being on maximal doses of the above therapies. This resulted in pronounced painful lesions on her bilateral temporal region, neck, back, and extremities. These lesions made Maya very self conscious (see Figures 1 and 2). Furthermore, her mother reported that Maya, who was in a gifted and talented program at her school, had suffered a marked drop in her scholastic performance over the previous year. She was also having difficulty engaging with other children and had been ostracized because of her appearance. Finally, Maya had become increasingly withdrawn in general and, as is common in children with AD, she had difficulty falling and remaining asleep. She had been co-sleeping with her mother for the past several months related to her physical symptoms and associated distress. Maya's frequent nighttime scratching behavior had compromised her mother's sleep quality as well.

Given the prolonged and severe nature of her symptoms, as well as their impact on multiple areas of functioning, Maya was referred for psychological evaluation and treatment. In the late

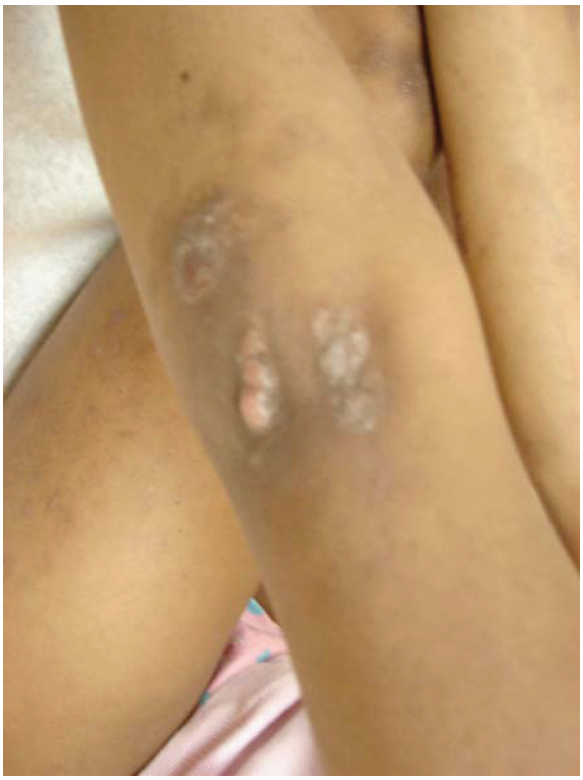

Figure 1. Left outer arm, top, at session 3

summer of 2009 she was seen by the pain psychology fellow (TRS), a clinical psychologist whose work integrates psychodynamic and empirically-supported therapies. In addition, she has a background in complementary and alternative medicine (CAM) research as well as formal training in hypnotherapy. Maya's treatment was supervised by the other two authors: JMS, who is a pediatrician, and NS, a behaviorally-oriented clinical psychologist whose specialty is pain management.

Maya presented as a thin, delicate-looking, extremely shy girl who often wore her hair in a bun or braids on top of her head. At the consultation Maya admitted to feeling anxious fairly often, including during doctor's visits. This was illustrated during the early sessions by her saying little and huddling between her parents on the therapy-room couch, although her curiosity frequently prompted her to peek out from under their arms. Despite her reticence, however, Maya was both quietly engaging and very likable.

Background and family dynamics

At the time of the consultation, Maya and her mother were temporarily living with the mother's brother in his apartment. Maya's mother also had an adult daughter from a previous relationship, who moved in with Maya and her mother later in the treatment. Maya's father lived with his fiancée and their infant daughter; Maya's scheduled visits with him were for alternate weekends and one weekday each week.

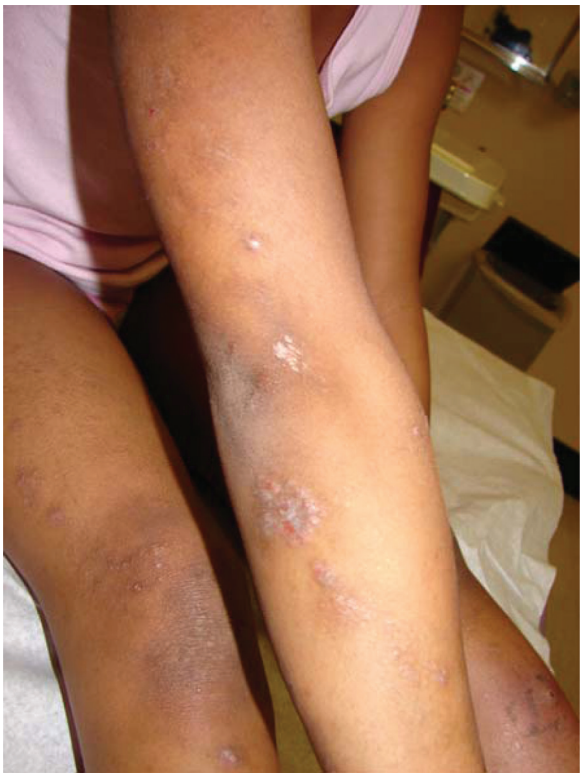

Figure 2. Right outer arm, bottom, at session 3

Both of Maya's parents were in the room with her during the initial sessions. At the consultation, Maya's mother and father provided background about her symptoms and the numerous treatments they'd tried, all to little or no effect. At first glance, like Maya, her mother presented as thin and delicate-looking; however, her appearance belied a quiet but firm determination to help her daughter. She spoke about Maya's symptoms softly and economically, describing how Maya's scratching would frequently awaken both of them. Mom addressed this by holding Maya's hands throughout much of the night, but neither slept much. Maya's father presented as a stocky man with a broad smile and forcefully charming demeanor, who was very engaging and spoke volubly. He frequently prodded Maya to respond promptly to questions or concur with his assessment of her condition.

The dynamic between the parents during the first session was such that the harder her father strived to present a picture of warmth and camaraderie between them, the more reserved and physically guarded her mother appeared. Maya seemed quietly and blissfully oblivious to this dynamic, snuggling deeper between the two, holding their hands tightly, and pulling as if to draw her parents closer together. Although it appeared that each of Maya's parents strived to conceal the tension between them from Maya and the therapist, this tension was both significant and palpable. During the initial and each subseqent session, Maya was asked to sit with the receptionist briefly to allow time for her parents and the therapist to speak privately. During the first session, Maya's parents revealed they had separated approximately two years prior as the result of her father's affair, which

ultimately produced another daughter. The timing of the affair and separation were coincident with significant worsening of Maya's dermatitis.

The parents openly disagreed about the degree of animosity between them, and there appeared to be a disparity with regard to their respective involvement in Maya's life and care. For example, Maya's father acknowledged that, during Maya's scheduled visits, his fiancée spent more time with Maya than he did and took primary responsibility for her care, including bathing, recreation, and meal preparation. Her father said that his work schedule necessitated this arrangement, but that he and Maya bonded by watching television together, as well as during occasional other outings. Her father compensated for the above by buying Maya candy and other treats, which delighted Maya but frustrated her mother, who was worried these snacks were unhealthy and might aggravate Maya's AD. Her mother reported that the father frequently canceled visits with Maya at the last minute, which resulted in Maya's significant distress; her father acknowledged that this was true.

Early on it was clear that Maya longed for her parents to reunite, a fantasy that her father indulged. As an example, Maya's parents were invited to remain in the room during Maya's early imaginal journeys, both to alleviate her anxiety and so that they would feel more comfortable guiding her in imagery exercises at home. It was also hoped that their participation would reinforce the experience of relaxation and engagement in the process for Maya. During the journeys, the parents were invited to close their eyes and allow themselves to engage in relaxation if they chose. In one session, her parents were asked if either would like to lead the imagery, in the hopes that this would increase the likelihood that they would feel comfortable doing so outside of sessions. Maya's father led the imagery, and created a journey where he, Maya, his infant daughter, his fiancée, and Maya's mother were present, with the latter two happily sitting together. Maya's mother remained silent during this journey but once Maya left the room, she voiced her frustration to Maya's father, albeit in a restrained manner. During another session, Maya asked her father, "Will mommy come to your wedding?" He replied in the affirmative, saying that they "still love each other," which prompted a silent denial from the mother. This dynamic provided only a hint of the provocation and animosity in the parents' relationship, both of which would become more evident as the treatment progressed.

In later sessions, without the father present, Maya's mother revealed that, since the separation, she and Maya had experienced marked and ongoing financial hardship, as Maya's father's financial support was minimal and inconsistent, despite a court order. Thus Maya's mother was forced to sell their house, and the two had lived with a number of different relatives on short-term bases since then. Her parents' disagreements eventually resulted in several additional court appearances over child support and custody.

Case formulation

Given the above dynamics and symptoms, as well as the therapist's integrative theoretical orientation, both psychodynamic and cognitive-behavioral lenses were used to view and understand Maya's case. Based on parental reports, it was hypothesized that the parents' thinly veiled animosity toward each other – expressed via arguments over the telephone, periodic threats related to custody (both parents), inconsistency with regard to the father's visits, and withdrawal of financial support (father) – triggered Maya's anxiety, which potentially maintained or aggravated her AD and accompanying symptoms. Thus her parents were encouraged to refrain from arguing when Maya was present in either home, even if they believed she was asleep or could not otherwise hear them. It was also recommended that they either return regularly for joint counseling aimed at fostering more successful coparenting, or seek this service outside of the clinic if they preferred.

Given the level of stress that parents of children with AD frequently experience (Balkrishnan et al., 2003; Lewis-Jones, 2006), it was also suggested that each might benefit from individual support via referrals to outside therapists.

Other potential triggers included Maya's chronic sleep deprivation and inconsistencies in her care (diet, bedtime, time spent engaged with Maya, toiletries and cleaning products used). With regard to Maya's day-to-day regimen, both parents were asked to strive for consistency between households with regard to food, bedtimes, and the cleaning and personal care items used. It was hoped that consistency with regard to the above would provide a sense of routine for Maya and help discern what products, if any, exacerbated her physical symptoms.

Finally, Maya clearly craved additional individual attention from her father. Thus, in addition to the above, her father was specifically encouraged to set aside time when he and Maya could play or go for outings without Maya's infant half-sister or her father's fiancée present. The issue of his canceling visits with Maya at the last minute was also addressed with him. He agreed to be more consistent with regard to his scheduled visits with her and said he would try to set aside time for play and outings. Both parents agreed to joint counseling sessions at the clinic; however, her father did not present for scheduled appointments after the initial few.

Treatment rationale

From the beginning, both of Maya's parents voiced significant frustration with the lack of improvement in Maya's symptoms from the medicines she'd used. Despite her stoicism, her mother revealed that the numerous doctor visits, which required taking time off from work, threatened her job security. Although committed to doing "whatever it takes" to reduce Maya's pain and itch, the costs of physician visits and medications had become particularly burdensome for her. Both parents expressed openness to psychological treatments and the mother voiced curiosity about CAM therapies. A literature review prompted the implementation of a multi-modal program comprised of family cognitive behavioral therapy (Habib & Morrissey, 1999), with adjunctive CAM techniques. These included relaxation with hypnotic induction and imagery (Chida, Steptoe, Hirakawa, Sudo, & Kubo, 2007; Cyzewski & Lopez, 1998; De L Horne, Taylor, & Varigos, 1999; Habib &, Morrissey, 1999; Fennessy et al., 2000; Richardson, Smith, McCall, & Pilkington, 2006; Sadat & Kain, 2007), pleasant aroma (Herz, 2009; Kiecolt-Glaser et al., 2008), drawing (Waller, 2006), and biofeedback (Habib & Morrissey, 1999; Olness, 2008; Sokel, Glover, & Knibbs, 1993) to identify symptom triggers and attempt to reduce itching, pain, and anxiety. Biofeedback is a technique that involves monitoring the changes in physiologic responses to one's thoughts or feelings. The technique is educative and, over time, enables one to gain increasing control over functions such as heart rate, skin temperature, muscle tension, and so on via an operant conditioning paradigm. Hypnosis and biofeedback have been associated with reductions in surface skin damage and lichenification (Sokel et al., 1993).

This integrative approach was consistent with the therapist's knowledge base and integrative theoretical orientation, as well as in keeping with the pain-service's cognitive-behavioral emphasis. The rest of the team was supportive of the treatment plan. It was hoped that this approach would be sufficiently engaging for Maya, that she would learn techniques to help regulate her mood and sleep, and that her skin would show visible improvement.

Given Maya's reticence and the family's desire to focus on her physical symptoms, the explicit aim of the sessions was on helping Maya and her family to learn techniques that could address the problem and that they could implement at home. Furthermore, taking the focus away from "talking" appeared to help Maya relax and become more fully engaged with the therapist despite her significant shyness.

Structure of the sessions

Following an update regarding Maya's pain, itch, anxiety, and overall coping during the previous week, she was asked about how she experienced her symptoms and what images might be healing for her. Then, imaginal journeys were begun by directing Maya to notice her breathing and feel increasingly relaxed, yet safe, with each inhalation and exhalation. This was followed by a brief, formal hypnotic induction (counting back from 10 to 1) to induce a light trance state. Specific suggestions were aimed at helping Maya increase feelings of well being and heal her skin using her own imagery. She was thus led on a journey to a "magical rainforest" with "cool air" and "lots of plants," where she wore a "pink, sparkly bathing suit" and stood under a "sparkly waterfall" that washed away itch and irritation, healing her skin. Maya understood that she could shape this journey any way she wished, and she added to this scene a "talking rabbit" who could guide her to and from the rainforest and provide her with answers to her questions (such as what would help her to heal). The name Maya gave to this rabbit was a shortened version of her father's name, although she did not explicitly make the connection between the two. This wise, gentle creature joined Maya on each subsequent journey throughout the treatment. Maya also added members of her family, including both parents, her older sister, her father's fiancée, and their infant daughter to these treks through the rainforest. At a later date, she added the therapist as well. Maya appeared delighted to take these journeys, perhaps in part due to feeling she had control over their content.

When Maya was asked if there was anything she could bring back from the journey that would help her, she thought for a moment before replying, "A box of the magical water." Maya said she could use the water to soothe her skin when it became painful or itchy. She was thus guided to visualize herself placing the box in her room, where she could access it any time she felt anxious or uncomfortable. The therapist made a conscious decision not to use words with negative associations, such as "itch" and "pain" during the journeys to avoid inadvertently reinforcing these sensations hypnotically. Throughout this process, Maya was encouraged to immerse herself fully in the experience, noticing the sights, sounds, and smells, the feel of the air on her skin, as well as if others joined her on her journeys. Each imagery exercise took approximately 10 to 15 minutes, and Maya was able to move and express herself freely throughout (and often did both). Although her symptoms typically returned to some extent during the course of the week, particularly at bedtime, during and after the imaginal journeys Maya reported feeling "relaxed" with little-to-no itching or pain after bathing in the waterfall. Sessions typically concluded with the processing of Maya's imaginal experience verbally and through drawing. Time was also allocated for her parents to ask questions and share any other information they thought might be relevant to Maya's condition or treatment. Sessions concluded with the therapist reinforcing the family's efforts with regard to home practice.

Maya's parents were encouraged to keep a monitoring diary of her pain and itch, as well as note what thoughts, feelings, and behaviors served to either trigger or alleviate the above. The mother agreed and complied with this request. Initially, Maya was asked to rate her pain and itch on a 0–10 scale, where 0 = no itch or pain and 10 = the worst symptom severity possible. Prior to and during the initial consultation Maya's itch and pain were often 10/10; however, quantifying her symptom severity in this way proved too abstract and somewhat confusing for Maya due to her age and level of cognitive development. Therefore, in the third session, Maya was given an adaptation of the Wong-Baker FACES Pain Rating Scale (Hockenberry & Wilson, 2009), a six-point pain assessment ruler ranging from 0–5 featuring different colored faces that appear increasingly distressed as the numbers increase (with a colorless face and the number 0 representing no pain, and a dark red face and the number 5 representing "excruciating, unbearable, torturing, crushing, tearing" pain). In order to measure itch severity, Maya was also provided with a copy of the "itch man scale,"

which was created by Blakeney and Marvin (2000) for use with pediatric burn patients. This instrument features a cartoon character resembling "Sponge Bob" illustrating a 0–4 scale rating the intensity of itching, with 0 representing no itching and 4 representing "itches most terribly; impossible to sit still/concentrate." After Maya's first in-session journey, her pain and itch ratings decreased from 10/10 to 1/10. This significant decrease in pain and itching immediately following the imagery became a consistent trend. At the next session, Maya began by rating her worst pain of the previous week, as well as her present pain, as 5/5 and her worst and current itch as 4/4. Maya was also asked to rate her anxiety using the FACES pain scale (Hockenberry & Wilson, 2009), and said she'd been "super nervous" (5/5) at bedtimes during the previous week, although she was unable to articulate what the triggers for the above were. Yet, once again, following the in-session imaginal journey she noted a decrease in pain, itch, and anxiety to zero.

Maya's mother was consistent with the journal keeping, and for the first third of the treatment often led Maya on imaginal journeys before bedtime. During an early session Maya's mother brought in a small machine that played rainforest sounds. She played the sounds at bedtime during their journeys and when she did not have time to do the exercise with Maya. At Maya and her mother's request, the sounds were played during an in-session journey.

There is evidence to support associative learning by pairing pleasant olfactory stimuli with emotional/behavioral effects (De L Horne et al., 1999). Recent research suggests that certain pleasant aromas, whether derived from essential oils or synthetic in composition, can decrease anxiety (Mezzacappa, Arumugam, Chen, Stein, Oz, & Buckle, 2010). Thus in this and some of the subsequent sessions, as well as at home, a small amount of a fragrance of Maya's choosing (cocoa butter or coconut scented lotion) was applied to a tissue or cotton swab and placed near Maya during her journeys. Drawing was also introduced as Maya greatly enjoyed this activity and became more engaged and less reticent during it. Furthermore, it was hoped that drawing would help her concretize the relaxing images (Waller, 2006). Without any direction as to what to create, Maya typically produced colorful drawings of the magic waterfall, embellishing them with glitter. She later placed them near her bed so she could view them prior to going to sleep. Creating and viewing these drawings seemed to reinforce Maya's feelings of relaxation and growing mastery, and reminded her and her mother to engage in the nightly imagery.

The patient's mother remained very supportive of the integrative program and made her own efforts to reinforce the training at home. Additionally, Maya and her parents became more aware of the relationship between symptoms and emotional distress through biofeedback. As an example, during one early session, Maya became distressed while describing feeling alienated by her peers. This affective distress triggered a relatively rapid 15-degree drop in skin temperature (from 87° to 72°), indicating stress-related vasoconstriction. Conversely, the entire family witnessed Maya's temperature rise in response to shifting her focus to her healing imagery. This experience was especially powerful for Maya, as it provided concrete evidence of her ability to effect bodily change via changes in her thoughts and feelings.

Finally, an outside health care provider informed Maya' s mother about an Israeli cream containing calendula, aloe vera, and arnica that was purported to sooth the skin. Maya's mother purchased the cream and reported additional benefits with regard to Maya's itch and lesions. Whether there was any additional benefit or not was difficult to determine in session, however, as Maya's skin had been improving for some time. Her mother discontinued the cream after several weeks, as the cost was prohibitive for her and the cream was difficult to obtain. Regardless, Maya's skin continued to remain clearer and her itch and pain levels remained decreased from baseline.

Due to increasing parental conflict, Maya's father stopped coming to sessions after the first third of the treatment, and this made it more difficult for Maya to be brought in on many occasions as her mother had difficulty leaving work early. Maya's mother remained engaged in the treatment, however, and made efforts to bring her in as regularly as possible. As the treatment progressed, her mother reported that, at times, Maya experienced no itch or pain at all. This improvement represented an important development; however, following a missed session and reports of increased stress at home, Maya briefly relapsed, scratching the temporal regions of her scalp until she bled. Related to this, although her average level of anxiety had reportedly decreased, it continued to spike at bedtime and in relation to the end of her scheduled weekends with her father, whom she clearly missed.

The therapy took a significant turn when, during one session, Maya intimated that someone was "bothering" her, and touching her in a way that was upsetting. Although it was extremely difficult to determine either the nature of the event or the person involved due to Maya's characteristic reticence and marked anxiety related to this issue, what she did share prompted concern about possible physical or sexual abuse. Following a frank discussion with her mother, and with the mother present, the therapist and supervising psychologist contacted the appropriate agencies to report the above. An investigation into the matter failed to confirm abuse; however, it effectively alienated Maya's father, who subsequently refused to bring Maya to the clinic or respond to the therapist's phone calls. Around this time the mother also disclosed a history of violent behavior and verbal threats toward her by Maya's father that had begun during her pregnancy with Maya. The parents' relationship, although no longer marked by physical violence, reportedly continued to deteriorate during the rest of treatment and in the months that followed. In an effort to provide the mother with support, the structure of each 60-minute session was altered to allow for 15–20 minutes to be spent meeting with her without Maya present. The mother was again encouraged to seek her own psychotherapy, and her efforts with regard to Maya's treatment were supported. She reported the desire to seek treatment but stated this was not possible due to significant financial hardship as well as increasing work hours. Despite feeling overwhelmed, she reported that the meetings with the therapist were helpful to her.

Even with the above stressors, further improvements in Maya's itch frequency, severity, scratching behavior, pain, and anxiety were, for the most part, maintained throughout treatment. Fewer visible lesions and episodes of bleeding were observed in-session and reportedly observed at home by both parents initially and Maya's mother subsequently. Maya reported a slight increase in her pain and itch following her and her mother's move with Maya's older sister to an apartment of their own. This remained lower than her initially described levels, however. Specifically, Maya and her mother reported decreases in her worst pain to 3/5 and itch to 3/4 from an average of 10/10 at time of the consultation. Furthermore, although she still experienced considerable nighttime anxiety, Maya was now able to sleep by herself, although she spontaneously revealed, "I never dream."

At a later session, which took place the day before Halloween, Maya arrived in a Snow White costume, smiling and playful despite the ongoing conflict between her parents and her father's recently-missing several scheduled visits with her. She eagerly described how her skin had improved, proudly displaying her arms and legs and pointing to her temples (Figure 3). She drew another picture, this time including an image of herself smiling and standing in front of the magic waterfall while wearing her Snow White costume (Figure 4). She also asked the therapist to draw a picture of herself, to which Maya added a very large box of the magic water, embellished with sparkles and glue. Although Maya remained shy at school and her classmates continued to make fun of her, her mother said Maya had become somewhat more proactive in reporting these incidents to her teacher and in attempting to stand up for herself. Her mother also remarked that

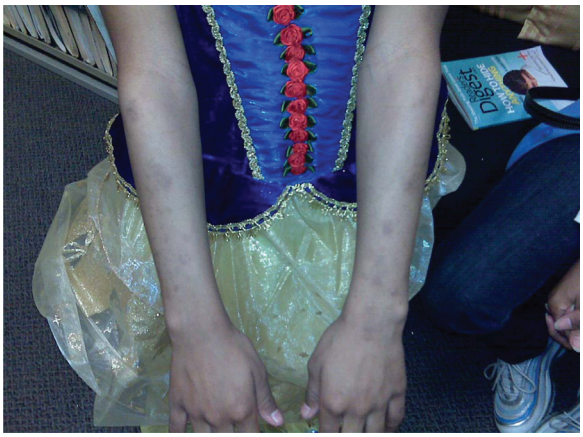

Figure 3. Patient's right and left arms at session 7

Figure 4. Patient standing next to her "sparkly, magic waterfall"

Maya's skin looked better than it had in some time, she was scratching less, and sleeping better, despite the fact that, without the therapist's or pediatrician's knowledge, the mother had discontinued all medications after the first six weeks of treatment. In addition, she had continued to keep Maya's pain, itch, and anxiety monitoring diary. Although Maya still had periods of increased pain and itch related to distress or the intensified family conflict, these spikes in symptom severity were rarer and her symptoms remained less severe overall, with many more pain and itch-free periods.

Although by then both Maya and her mother were invested in the treatment and had formed positive alliances with the therapist, in the winter, the mother received notice that her job might be eliminated, and it became extremely difficult for her to continue leaving work early for Maya's sessions. Furthermore, she had recently taken on another part-time job in order to support herself and Maya. On weekends, she brought Maya to the office with her, but this reduced the amount of quality time that she and Maya could spend together. As her father refused to bring Maya to

sessions, the gaps between them grew and many more were missed. By phone, Maya's mother was encouraged to continue Maya's at-home practice with regard to imagery and drawing as she had done during other times when they could not come to sessions.

Toward the end of the treatment, when asked about her ongoing bedtime anxiety, Maya said she feared "monsters in my closet," although she was unable to articulate the nature of the monsters, or describe what they might have wanted from her. Thus the session focused on helping Maya to increase feelings of safety and achieve some degree of perceived control over her sleeping environment. Drawing upon images Maya had created in a previous session, guided imagery with hypnotic induction was employed in which Maya visualized herself "blowing pink, sparkly, magic bubbles" that gradually grew in size to encompass Maya and her entire room. During the imagery, she reported that the bubbles "shined light" into her room and the closet, and that this helped her feel calmer. Toward the end of this journey, Maya said she felt safe enough to "open the closet door." When asked what was in there, she paused, and then smiled and said, "Nothing." By the final session that winter, Maya said she was no longer nervous at bedtime and spontaneously reported that she had begun dreaming, although she could not remember her dreams after awakening.

Maya was not seen again until the early spring of 2010, approximately three months after the most recent session, due to her mother's difficulties with regard to bringing her in. Upon arriving, she eagerly greeted the therapist. Although she continued to struggle with her physical and mood symptoms, her treatment gains appeared to be largely maintained. Her mother indicated that she hoped to bring Maya in more frequently but that this remained difficult.

Follow up

As the therapist's fellowship neared its end, Maya's mother was contacted by phone to inform her of the above and inquire about Maya's well being. Her mother reported that, although Maya's father remained inconsistent with regard to his visits with Maya, as well as with financial support, he often bought her expensive gifts and had promised to take her to a well-known theme park. According to Mom, Maya's father told Maya that his missed visits with her were due to her mother's interference. Although they had previously been close, Maya had since become increasingly distant from and defiant with her mother, reportedly saying, "I want to live with Daddy!" In the next session, Mom revealed that this situation, coupled with longer work hours and the ongoing financial and other challenges related to Maya's care, were extremely stressful for her. She found herself losing her patience with Maya's changes in behavior and frequent complaints. It was suggested that Mom try to bring Maya in to provide her with closure and to discuss referrals for her ongoing treatment. Several appointments were made and missed. Maya was ultimately seen two more times that spring, with each visit taking place several weeks after the previous one.

In the time that had passed, Maya appeared to have grown taller and thinner, become slightly less reticent, and to have developed new lesions on her temples and the back of her neck. Although these were not as severe as the lesions that had initially brought her to treatment, the skin appeared raw and the lesions seemed to cause Maya and her mother distress. Her mother reported that she had been unable to continue the bedtime journeys with Maya, as she often found herself too exhausted upon returning home from work and after cooking, cleaning, and doing laundry.

After her mother left the room, Maya reported defensively that all was "fine" with regard to home and school, but ultimately confirmed that she wanted to live with her father, that he was planning to take her on vacation, and bought her toys and other things she wanted. She said she was angry with her mother for having to "work all the time" and being unable to buy her things. She blamed her mother for upsetting her father, which she believed lead to him canceling scheduled

visits with Maya. Attempts to discuss the termination of the therapy with Maya initially were met with shrugs, and later, a quiet, "I'll miss you." Before the end of this session, Maya's mother was invited back into the room, and the two were encouraged to discuss Maya's anger and disappointment related to what she had just mentioned. Her mother shared her sadness and frustration about this situation with Maya, as well as how hard she was working to provide for her. Mother and daughter appeared closer afterwards, and the observed dynamic less stressful. Although the plan was for Maya's mother to bring Maya in for two more sessions, these appointments were missed. Thus referrals to therapists closer to their home were provided to her mother via both phone messages and a letter. At present, it is unknown whether the referrals were pursued.

Discussion, limitations, and future directions

The management employed in this case illustrates the utility of an integrative psychosocial approach to reduce pruritus, pain, and scratching behavior that were refractory to medical treatment. These effects were especially significant given the presence of a number of psychosocial stressors, including marked parental conflict, financial, academic, and housing problems – most of which persisted or worsened during the treatment period – as well as an investigation into possible sexual or other abuse. Although the latter concern was not substantiated, it undoubtedly increased the tension between Maya's parents and created additional stress for Maya.

In addition to the above, Maya's mother had discontinued all of Maya's medical therapies – orally-administered and topical – within the first six weeks of treatment, suggesting that mind–body approaches alone were sufficient to effect observable change in Maya's skin, behavior, and anxiety. Finally, Maya's gains seem particularly important in light of the fact that we were not remotely able to maintain the "standard," once-weekly psychotherapy schedule as many sessions were missed during the four-month treatment, as well as during the follow-up period, due to work-related conflicts, court appearances, and for other reasons. This resulted in Maya's being seen for only nine one-hour sessions plus three follow-up sessions that were spaced relatively far apart. Despite these challenges to continuity of treatment, and several ongoing psychosocial stressors, Maya's pain, itch, and distress improved significantly. Although her dermatitis had reappeared by the final sessions, her lesions were noticeably less pronounced than they had been at the time of the consultation.

Although it is not possible to isolate the effects of individual treatments, there are a number of factors that likely contributed to Maya's improvements. First, Maya's mother appeared to be an accurate historian and conscientious with regard to treatment recommendations and record keeping with respect to the pain/itch/mood monitoring diaries. Meeting with Maya's mother relatively frequently and engaging her as an active participant in Maya's care may have been a key – if not quantifiable – factor in the effectiveness of this approach. One could assume that Maya would only benefit from increased time and support from her mother and, presumably, that her mother's belief in the treatment may have created an expectation of benefit in Maya that enhanced her ability to heal. Furthermore, having both of her parents present during the early sessions seemed to allow Maya to recreate some version of the family she had once known. Maya's tendency to imaginally include her entire family in the journeys, as well as to internalize a more positive representation of her father via the constant, wise, and gentle rabbit, seemed to mitigate some of the feelings of loss, disappointment, anxiety, and presumably unconscious anger with regard to his inconsistent presence in her life.

With regard to the specific treatments employed, the literature on pediatric atopic dermatitis has documented the significant role of psychosocial factors in the maintenance and progression of

symptoms (Beltrani & Boguneiwicz, 2003; Fennessy et al, 2000; Habib & Morrissey, 1999; Levenson, 2008). The psychological approaches utilized (family cognitive behavioral therapy [CBT], imagery/hypnosis, and relaxation training; Chida et al, 2007; Cyzewski & Lopez, 1998; De L Horne et al., 1999; Fennessy et al., 2000; Habib & Morrissey, 1999; Levenson, 2008; Richardson et al., 2006; Sadat & Kain, 2007; Sokel et al., 1993), have considerable support for their efficacy in reducing distress, increasing feelings of calm, and decreasing pain severity in adults and children. Although the evidence is perhaps less abundant or rigorous for the efficacy of pleasant aroma on symptom reduction, in recent years, research has emerged that may begin to validate and explicate claims of its effects on enhancing relaxation (Kiecolt-Glaser et al., 2008; Mezzacappa et al., 2010; Sokel et al., 1993). Biofeedback has demonstrated efficacy for reducing pain and conditioning a relaxation response in a variety of populations, including for atopic eczema (Cyzewski & Lopez, 1998; Olness, 2008; Sokel et al., 1993); however, in this treatment, the intervention was used less frequently than the others. As such, its primary benefit appeared to be in helping Maya and her parents understand how readily and powerfully her emotional state impacted her physiology, for better or worse. With regard to drawing, a review of the literature failed to unearth evidence supporting the use of this modality for reducing itch or pain. However, this therapy helped to draw out an otherwise reticent child and shed some light on Maya's inner experience (Waller, 2006). From the beginning, she was able to visualize and concretize her soothing images sufficiently to reproduce them on paper. When, over time, Maya added her own likeness to this scene, and also asked the therapist to draw herself, it suggested both that the journeys had become more real and important to her and, presumably, more effective. Additionally, Maya's drawing seemed to reveal her connection to the therapist, as well as her to ability to internalize healing metaphors and images that she could alter as needed (such as when she created the image of the magic, sparkly bubbles to reduce her bedtime anxiety). Thus, the drawings seemed to represent both Maya's progression in the treatment and a way in which the in-session work could be taken home with her. Drawing also seemed to reinforce Maya's feelings of safety as well as adherence to the nightly journeys. Finally, perhaps essential ingredients in the success of this treatment despite notable challenges were that they were developmentally appropriate, incorporated modalities that Maya enjoyed using, and sought to involve her parents (Ersser et al., 2009; Gerik, 2005).

The above gains notwithstanding, there were several challenges to both this treatment and pediatric case studies in general, including those mentioned previously. Specifically, one of the universal challenges is that treatment attendance is dependent on patients' parents or an adult member of the family bringing children to sessions. For example, one of the observations we made was that periods of increased parental conflict were associated with significant interruptions in the child's treatment attendance. Related to this, assuming that her family's involvement was a crucial aspect of the treatment, it is not surprising that increased tensions within the family and the cessation of her mother's home practice of the therapies with Maya preceded a recurrence of symptoms that unfortunately could not be addressed adequately toward the end of therapy.

An additional challenge with respect to case studies is that, when working with younger children, one must rely on parents to maintain diaries of symptom course. For example, in this case study, Maya's father did not keep monitoring diaries at all, which prevented examination of any changes in her symptom severity during visits with him. Thus there was missing data regarding her pain, itch, or mood for up to several days each month. Although the patient's mother reported quantitative ratings of pain, itch, and mood, at each of the sessions attended, much of our data is qualitative in nature, and the large gaps of time between sessions made it impossible to statistically examine trends in quantitative ratings week to week. Furthermore, given the nature of a clinical case versus a clinical trial, it is not possible to rule out threats to internal validity, such as effects of

history or maturation, threats to external validity, such as the effects of prior or multiple treatments, or other factors that may have contributed to either periods of increased or decreased symptom severity/frequency. It is thus difficult to generalize the above findings to the larger pediatric atopic dermatitis population.

With regard to her mother's brief addition of the Israeli cream to the treatment regimen, it is unclear to what extent it may have augmented any healing effect on Maya's skin, particularly since it was introduced after benefits were already reported as well as observed in session, and these benefits continued after the cream was discontinued. Thus we cannot say whether this would have been another potentially useful adjunct if her mother could have afforded to continue using it. Finally, it is not possible to determine to what extent the rapport between this particular therapist and the patient (and each of the patient's parents) impacted treatment outcomes one way or the other. Yet, much as there are limitations to case studies, they serve an important role and have the potential to become the bases for future clinical trials of multidisciplinary approaches to symptom management in children.

In conclusion, this case suggests that a short-term, integrative psychosocial approach incorporating psychological, CAM, and medical therapies may represent a novel and efficacious treatment model for school-aged children suffering from severe atopic dermatitis, even under less than ideal conditions.

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