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L. Kevin Chapman¹ and Ryan C. T. DeLapp¹

Abstract

The treatment of blood-injection-injury (BII) phobia has a unique treatment component as compared with other types of specific phobias. In particular, many patients with a BII phobia distinctively experience an increased susceptibility to fainting when exposed to feared medical-related stimuli due to a diphasic physiological response. Moreover, effective treatment protocols must not only include therapeutic techniques to ameliorate the patient's fear response but also teach strategies that will allow the patient to remain conscious during exposure to feared stimuli. The current case study describes a manualized, cognitive behavioral therapy that utilized applied muscle tension techniques to comprehensively address the multifaceted components of an adult male's BII phobia. Treatment included a combination of psychoeducation and cognitive restructuring that provided the patient with an empirically based understanding of BII phobia, practiced using applied muscle tension techniques to better manage his physiological processes during exposure followed by the utilization of in vivo graduated exposure to reduce distress and avoidance of feared stimuli. After completing nine sessions, the patient demonstrated considerable improvement as evidenced by reductions in anxiety and the willful seeking of medical care following treatment. Further implications and future directions for research are discussed.

Keywords

blood–injection–injury phobia, cognitive behavioral therapy, applied muscle tension, exposure

I Theoretical and Research Basis for Treatment

Specific phobia is characterized by excessive and unreasonable fear triggered by the anticipation or presence of a specific object or situation (*Diagnostic and Statistical Manual of Mental Disorders* [4th ed.; *DSM-IV*]; American Psychiatric Association, 1994). Specifically, a blood-injection-injury (BII) phobia describes individuals who are considerably fearful of exposure to blood or medical-related procedures (e.g., receiving a shot, surgery). Moreover, these individuals experience extreme physiological reactions when thinking about or encountering the feared medical stimuli, which often results in the avoidance of important medical procedures ranging from routine check-ups (e.g., physicals, phlebotomies) to surgical operations. Individuals with BII

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phobias exhibit a lifetime prevalence of 3.5% with the higher incidences occurring in patients with comorbid psychiatric conditions, such as panic disorder (Bienvenu & Eaton, 1998). Considering the potential health risks caused by the avoidance of medical care, it necessitates the identification of effective treatment protocols that address the symptomology of BII phobia (e.g., physiological reaction, panic responses, and thought processes).

A unique feature of BII phobias that is uncharacteristic of other types of phobias is a potentially strong vasovagal response (e.g., fainting; Barlow, 2002; Mednick & Claar, 2012). Typically, exposure to feared, more ubiquitous stimuli (e.g., feared animal) elicits an increase in blood pressure and heightened heart rate (i.e., tachycardia). However, many BII phobic reactions are characterized by a diphasic physiological response that includes an initial increase in blood pressure and heart rate (potentially caused by the anticipation of going to the doctor, seeing blood, or getting shot) followed by a sudden decrease in blood pressure and heart rate (i.e., bradycardia; Mednick & Claar, 2012). The latter portion of this physiological response, called vasovagal syncope, is the impetus for fainting reactions, which is cued by exposure to feared medical-related stimuli (e.g., blood, needles; Cox & Mohr, 2003). Furthermore, it is proposed that activity in the vagus nerve, “a parasympathetic nerve that innervates the chest and upper abdomen,” is responsible for the dramatic decrease in physiological arousal (Antony & Watling, 2006; Barlow, 2002, p. 394).

Recent literature has identified another component of BII phobias, referred to as disgust sensitivity, or “the degree to which a person feels disgusted in response to a variety of stimuli (Woody & Tolin, 2002, p. 544),” that also influences one’s susceptibility to fainting (Olatunji, Smits, Connolly, Willems, & Lohr, 2007; Olatunji, Williams, Sawchuk, & Lohr, 2006; Sawchuk, Lohr, Tolin, Lee, & Kleinknecht, 2000). Extant literature suggests that strong disgust sensitivity elicits parasympathetic activity and reductions in blood pressure that influence fainting symptoms in BII phobics (see Sawchuk et al., 2000). Disgust reactions have also exhibited a strong positive correlation with BII-related fears (Olatunji et al., 2007; Olatunji et al., 2006; Sawchuk et al., 2000) and evidence has shown that these reactions are indirectly related to fainting symptoms through its relationship with BII-related fears (Olatunji et al., 2006). Furthermore, though evidence has shown heightened global disgust sensitivity in phobic (i.e., BII and spider fears) compared with nonphobic individuals (Sawchuk et al., 2000; Tolin, Lohr, Sawchuk, & Lee, 1997), previous literature has identified a specific category of disgust that appears more salient to BII phobic individuals. Disgust sensitivity has been dichotomized into two categories: (1) core disgust, or a sense of vulnerability in being contaminated by a nonpredatory animal, and (2) animal reminder disgust, or an emotional dislike or repulsion to reminders of human “animalness” (e.g., blood, veins; Sawchuk et al., 2000), and extant literature has, more specifically, identified animal reminder disgust as more impactful to the BII phobic individuals (Olatunji et al., 2006; Sawchuk et al., 2000). Specifically, Olatunji et al. (2006) found that only animal reminder disgust was predictive of fainting symptoms in BII phobic individuals; however, BII-related fears mediated this relationship.

Moreover, the empirical literature has consistently demonstrated that a cognitive behavioral approach is most effective in treating BII phobias (for review, see Antony, McCabe, Leeuw, Sano, & Swinson, 2001; Barlow, 2002; Craske, Antony, & Barlow, 2006; Hellstrom, Fellenius, & Ost, 1996; Lang & Craske, 2000). The main objectives of this approach are to provide patients with an empirically supported understanding of their anxiety, to challenge and restructure erroneous beliefs held about the feared stimuli, and to alleviate avoidance of the feared stimuli through gradual exposure (Cox & Mohr, 2003). Along these lines, extant literature indicates that Cognitive Behavior Therapy (CBT) has been an effective treatment for self-injection phobias (Cox & Mohr, 2003) and dental care phobias (for review, see Agdal, Raadal, Skaret, & Kvale, 2010; Barlow, 2002). Notably, one case study demonstrates the efficaciousness of CBT techniques in addressing the self-injection phobia of a patient diagnosed with multiple sclerosis. Specifically, Cox,

Mohr, & Epstein (2004) utilized several CBT techniques, including cognitive restructuring, modeling, and exposure to challenge maladaptive thoughts related to self-injections as well as decrease the patient's anxiety related to the feared stimuli. Regarding the impact of CBT on disgust sensitivity in BII phobia, Olatunji et al. (2007) found that the decline in fear of stimuli was greater than for disgust related to stimuli following repeated exposure techniques suggesting that the extinction of disgust reactions may be more resistant to exposure therapy than fear responses. Given such findings, Olatunji and colleagues propose that when treating BII phobic individuals with strong disgust sensitivity, adding exposure trials to the treatment protocol may reduce the chance of BII avoidance reemerging and increase the likelihood of sustained improvement.

Furthermore, evidence indicates that CBT's treatment efficacy can be bolstered by applied muscle tension therapy, which contains a two-step approach to addressing the potential vasovagal syncope that is often experienced by BII phobic patients. Prior to engaging in graded exposure, Mednick and Claar (2012) propose that the patient acquires enough practice engaging in muscle tension techniques, which enhances the likelihood the patient can avoid fainting during exposure. Specifically, this technique encourages patients to continually tense muscles throughout the body (e.g., thigh, stomach, arms, fists, jaw) for around 10 to 15 s followed by a 20- to 30-s muscle release, which is intended to prevent an excessively aroused or relaxed state. Moreover, by utilizing muscle tension during exposure, the patient is able to "counteract" a sudden decrease in blood pressure and delay or prevent the onset of fainting sensations long enough for the patient to begin habituating to the feared medical stimuli (Barlow, 2002; Mednick & Claar, 2012).

Though previous literature has recommended applied muscle tension and CBT techniques (e.g., cognitive restructuring) as most effective in optimizing the treatment outcomes in BII phobic patients (Antony & Watling, 2006; Barlow, 2002; Mednick & Claar, 2012), a recent review of randomized control trial (RCT) studies examining therapeutic techniques (i.e., applied tension, tension-only, exposure-only, applied relaxation) used to treat BII phobia has found inconclusive evidence for which component of treatment is most effective in addressing patient fear reactions and fainting symptoms (Ayala, Meuret, & Ritz, 2009). Researchers only identified 5 RCTs conducted by the same research group, which found that each treatment approach has demonstrated comparable improvements in about 70% to 80% of BII phobic subjects. Notably, Ayala and colleagues noted that these studies included small sample sizes and have yet to be replicated, suggesting that further research is needed to detail the impact of each treatment on the course of the disorder. In light of these inconclusive findings, a case study investigating the utilization of applied muscle tension in conjunction with cognitive behavioral techniques is warranted as it will provide insight into active mechanisms of change throughout the course of treatment. Inasmuch, what follows is a case study in which we demonstrate the application of applied muscle tension in the context of manualized, CBT in nine sessions with an adult male patient suffering from a long-standing BII phobia.

2 Case Introduction

"T" is a 42-year-old non-Hispanic White male self-referred for his intense fear of medical procedures as evidenced by panic-like fears on exposure to routine medical procedures (e.g., blood pressure cuffs, waiting rooms) and vasovagal syncope on exposure to routine phlebotomy.

3 Presenting Complaints

T has been unable to receive routine physical examinations due to "severe" panic attacks when presenting to the doctor. T has presented for treatment due to significant distress and impairment, particularly as it relates to his two children, one of which requires frequent medical visits as a

result of Autism Spectrum Disorder. Such complaints, like being unable to observe medical procedures received by his children due to his medical phobia, are characteristic of the severity of impairment individuals with BII phobia experience (Ost, 1992).

4 History

T reported a pervasive history of medical phobia with a history of multiple psychological vulnerabilities. As a child, T's mother "jokingly" suggested on a number of occasions that he was susceptible to heart problems. T stated that he has been suffering from these fears for "over twenty years," and notes several incidents that contributed to his current apprehension of medical procedures. In addition, T stated that he spent a significant portion of time with his maternal grandparents, which represented another psychological vulnerability. Specifically, T reported frequent exposure to incidents that surrounded death. For example, T noted that his grandmother was extremely anxious and that she continuously listened to an ambulance dispatch scanner that reported local emergencies throughout the day, something he was invariably exposed to. Moreover, T reported that at the age of 10, he was the only individual physically present when his grandfather died of cancer. T further noted that he witnessed his uncle die of cancer and his aunt die of lupus on separate occasions. In addition, T noted that he was fearful of crowds as a child and would "hide in the closet" when strangers would visit his home. T reported that he has always been wary of novelty and generally socially inhibited throughout childhood and adolescence. Notably, the relevance of T's childhood experiences (e.g., exposure to the death of loved ones) to his current fear of medical-related stimuli has shown to be common in the individuals with BII phobia (Ost, 1992).

Furthermore, aside from reporting that he had always been anxious about medical procedures, T noted an incident that occurred upon graduation of high school as particularly meaningful in the manifestation of his current fear of medical stimuli. T reported that he had a routine medical evaluation after graduation and that the physician "exaggerated" the importance of health, his physical exam, and eating habits. Although the client did not report negative results from the physical examination, T did report "an instance of high blood pressure," immediately following the aforementioned examination. Subsequently, T reported a romantic relationship as a college freshman that he deemed as ending prematurely and resulted in him being prescribed an antidepressant for several months. T denied suicidal ideation during that time. Most recently, T reported anxiety and "severe" panic attacks when going to the doctor. Although T reported being in excellent shape as evidenced by competing in triathlons, he reported cancelling doctor appointments due to receiving a "poor bill of health" as well as experiencing panic attacks and syncope at exposure to blood and needles. T further noted that he recently saw a psychiatrist and was prescribed Xanax and a beta-blocker to combat his anxiety associated with medical visits. T stated that he had never received any outpatient therapy for his medical phobia and that he was motivated to seek treatment.

5 Assessment

T participated in a comprehensive assessment including self-report questionnaires and a diagnostic interview. The following self-report questionnaires were administered to T during intake.

The Beck Anxiety Inventory (BAI)

The BAI (Beck & Steer, 1990) is a self-report questionnaire designed to measure symptoms associated with anxiety. The BAI has demonstrated excellent reliability and validity in clinical and nonclinical samples.

The Beck Depression Inventory (BDI)

The BDI (Beck & Steer, 1990) is a self-report measure of depression symptoms over the past 2 weeks. The BDI has consistently demonstrated excellent reliability and validity.

Quality of Life Satisfaction Questionnaire (Q-LES-Q)

The Q-LES-Q (Endicott, Nee, Harrison, & Blumenthal, 1993) is a self-report measure that assesses general satisfaction with life across a number of domains in the client's life. Kocsis et al. (1997) reported that the Q-LES-Q is both reliable and valid following in assessing changes following treatment.

The Fear Survey Schedule II (FSS-II)

The FSS-II (Geer, 1965) is a self-report questionnaire that assesses fear of a number of objects and situations on a 0 to 6, Likert-type scale with 0 indicating "none" and 6 indicating "terror." Although it is suggested that the FSS-II be used for research purposes, the FSS-II was utilized to gauge the number and severity of fears experienced by T.

The Blood-Injection Symptom Scale (BISS)

The BISS (Page, Bennett, Carter, Smith, & Woodmore, 1997) is a 17-item, self-report questionnaire that assesses the sensations experienced during situations involving blood or injections. The internal consistency for the BISS in the original study was adequate ($\alpha = .86$). The validity was obtained from a factor analysis with no other studies to date examining its validity.

During the clinical interview, T reported that he experienced the aforementioned Major Depressive Episode following a break-up in college. He further endorsed symptoms of Panic Disorder, but these symptoms occurred exclusively in the context of medical procedures. On completion of the diagnostic interview and self-report questionnaires, it was determined that T met criteria for a diagnosis of blood-injection-injury phobia and Major Depressive Disorder, Recurrent, in Full Remission.

6 Case Conceptualization

A cognitive behavioral conceptualization for BII/medical phobia best describes T's experiences, specifically in line with Barlow (2002). As such, multiple vulnerabilities have interacted to facilitate T's perception that medical procedures and blood are "dangerous." A generalized biological vulnerability (including familial transmission of anxiety and a tendency to associate fear and anxiety with certain objects and situations) in concert with a number of distinct learning experiences caused T to associate fear, anxiety, and death with blood/medical contexts. T's early learning experiences with the radio scanner tuned into ambulatory emergencies, observing the deaths of multiple family members, an instance of high blood pressure, and witnessing other family members faint during medical procedures served as specific psychological vulnerabilities. In addition, T's exposure to an anxious mother who described physical ailments as "dangerous," as well as modeled avoidance behaviors, caused T to perceive physiological arousal and doctors as dangerous. Moreover, the inherited tendency to experience vasovagal syncope along with these specific psychological vulnerabilities may have set the stage for multiple false alarms (situationally bound panic attacks) in the context of medical equipment (e.g., blood pressure cuffs, monitors, the sight of needles), settings (e.g., waiting rooms, name called during appointments), and procedures (e.g., having blood drawn, having blood pressure taken). T's

Table 1. Fear Acquisition Form (Craske, Antony, & Barlow, 2006).

Phobia	Traumatic Experiences	Observational learning	Informational transmission
Doctor visits	<ol style="list-style-type: none"> 1. Grandfather died of cancer and I was with him 2. Watched uncle die of lupus 	Grandmother and scanner	Mother's comments while watching "20/20"
Medical procedures/ blood	<ol style="list-style-type: none"> 1. Passing out while getting blood drawn 2. Panic attack at doctor's office during routine checkup 	The movie "Last Man Standing"	Doctor said my problems were "cardiac in nature."

experience with multiple false alarms has not surprisingly become learned alarms that T has associated with various medical cues and contexts. Moreover, T's experiences with vasovagal syncope are specific to observing needles entering one's arm or the sight of blood. Furthermore, T's anxiety about medical procedures has been maintained through the process of negative reinforcement by renegeing on scheduled appointments, thus temporarily relieving his anxiety about medical procedures. These avoidance behaviors have set the stage for a generalized psychological vulnerability (anxiety associated with future contact with blood or medical procedures) in addition to guilt and shame due to his inability to be physically present for such procedures for his children. Furthermore, T engages in an intense exercise routine that includes running, biking, weight training, and swimming that indirectly serve as avoidance strategies for doctor visits while maintaining an illusion of control.

7 Course of Treatment and Assessment of Progress

T was self-referred for individual treatment of his BII/medical phobia after hearing about cognitive behavioral therapy on the internet. For the initial assessment, T successfully completed 9 sessions of manualized, cognitive behavioral therapy (*Mastering Your Fears and Phobias* [MYFP]; Craske et al., 2006) that also included applied muscle tension. Each session included collaborative agenda setting as well as homework to facilitate generalization of in-session learning. At baseline, T completed the aforementioned measures prior to beginning treatment. On the BAI, T's responses yielded a total score of 41 that is in the "severe" range of anxiety. On the BDI-II, T's total score was 9, indicating "minimal" depression symptoms. T's results on the Q-LES-Q indicated that he generally believes that he has good health in most domains, although he reported "fair" when asked about physical health, mood, overall sense of well-being, medication, and overall life satisfaction. On the FSS-II, as expected, T endorsed a 6 ("terror") for blood and a 5 ("very much fear") for death, illness, death of a loved one, untimely or early death, and hypodermic needles. T endorsed "yes" for all 17 items on the BISS, which suggests the experience of negative sensations in situations involving blood or injections.

Sessions 1 to 2

The first two sessions were dedicated to further assessment of fear acquisition, psychoeducation, and the importance of self-monitoring. During Session 1, T learned the commonality of specific phobias in the general population as well as the role of the vagus nerve during the process of vasovagal syncope. The cost and benefits of treatment from a CBT perspective were subsequently discussed followed by completion of a Fear Acquisition form (Craske et al., 2006). As indicated in Table 1, T reported traumatic experiences and observational learning surrounding

Table 2. Bodily Sensations Form (Craske, Antony, & Barlow, 2006).

Sensation	Fear of sensations (0-100 scale)	Comments
Racing heart	95	"The heartbeat causes me to lose control"
Hot flashes or cold chills	60	"Other people will notice"
Chest tightness	50	NA
Dizziness, unsteadiness, fainting	45	"I turn as white as that door" (points finger); "I look bad." "I feel sick"
Shortness of breath	30	NA

doctor visits in general and medical procedures specifically that have served as specific psychological vulnerabilities. For homework, T was instructed to read "about blood, infection, and medical phobias" (Antony & Watling, 2006). During Session 2, T was introduced to the Phobic Objects and Sensations Form (POS; Craske et al., 2006), the Bodily Sensations Form (BS; Craske et al., 2006), a Thought Record, and the Avoidance and Coping Strategies form (ACS; Craske et al., 2006). The importance of objectively recording fears based on treatment priority was described during administration of the POS form. Specifically, the POS simply requires the patient to place a check mark beside the object or situations that he fears followed by numerically rank ordering each object or situation. On the POS form, T rank ordered the following objects and situations based on top treatment priority: doctors/hospitals, blood, needles, heights, and airplanes. Next, the BS form was introduced (see Table 2). As indicated in Table 2, T reported that a racing heart was his most frightening physical sensation when encountering phobic objects or situations, followed by hot flashes or cold chills, and dizziness/unsteadiness/fainting. Following a discussion of the BS form, a thought record was described and provided to T. Not surprisingly, T listed doctor visits and medical procedures as the phobic object or situation. T was then asked about his specific thoughts about medical procedures in which he reported "I will die like my uncle and aunt at the doctor." Following this discussion, the client reported significant insight into his fear and anxiety related to doctor visits and medical procedures. T was subsequently given a Phobic Encounter Record (PER; Craske et al., 2006) for homework that is designed to record a specific encounter with the phobic object or situation during the ensuing week. The PER includes rating maximum fear of the phobic object/situation (0-100 point scale), bodily sensations experienced, feelings, thoughts, and behaviors toward the phobic object/situation.

Session 3

Following a recap from the previous session, Session 3 included a discussion of cognitive restructuring and exposure therapy. Not surprisingly, T reported no encounters with his feared objects or situations during the previous week. However, T did report gaining insight after reading the assigned reading from the previous week and another incident in which he became anxious. T reported feeling "panicky" at the barbershop due to "others watching," but he remained in the situation, assessed his cognitions, and quickly calmed down. Ultimately, T reported feeling optimistic about this experience. Following encouragement, the rationale for cognitive restructuring was described (misinformation and misinterpretations of situations, objects, and bodily sensations) and specific thinking errors were described (e.g., catastrophizing and jumping to conclusions). The basic premises for exposure therapy were subsequently discussed in addition to exposure being described as the most important component of treatment. The key principle described to T was the notion of remaining in a situation with the phobic object or situation long enough to facilitate new learning. During this discussion, the importance of changing cognitions

Table 3. Exposure Hierarchy With SUDS by Treatment Session.

Situations	Initial SUDS (0-100)	Treatment session
Getting a physical or stress test	100	9
Getting blood pressure taken at CVS (a local pharmacy) or Wal-Mart	90	9
Getting blood pressure by a nurse	85	9
Taking blood pressure myself	75	9
Getting a phlebotomy	70	8
Seeing someone get a phlebotomy in person	55	8
Taking my own blood sugar	55	7
Wife taking my blood sugar	50	6
Seeing someone get a phlebotomy in a video	50	6
Wrapping a tourniquet around my arm and touching my veins	45	5

Note. SUDS = Subjective Unit of Discomfort Scale.

was underscored particularly the notion of treating thoughts as hypothesized rather than concrete facts. T was subsequently given a reading assignment for homework related to “developing a hierarchy” (Antony & Watling, 2006).

Session 4

Following a recap from the previous week, Session 4 entailed further discussion of exposure followed by the generation of a fear hierarchy. T reported no encounters during the previous week with phobic objects or situations. However, T noted that he felt optimistic during the previous week and purchased a blood pressure cuff and a heart rate monitor in preparation for his phobic encounters. As such, myths associated with exposure being ineffective during previous encounters were discussed, specifically emphasizing the insufficient duration of remaining in the situation, lack of cognitive restructuring during previous exposures, and the importance of fear tolerance. Old associations (e.g., doctor office = fear and anxiety symptoms = “surely I will die”) becoming new associations (e.g., doctor office = fear and anxiety symptoms = “I will not die”) were also emphasized. Furthermore, T was provided with an exposure hierarchy form and was encouraged to collaboratively generate up to 10 feared items with an accompanying anxiety rating (0-100). The concept of SUDS was described (Subjective Unit of Discomfort Scale) and explained as a method for assessing his anxiety while encountering phobic stimuli. Table 3 illustrates items generated on T’s exposure hierarchy. T was encouraged to examine his generated fear hierarchy and modify as needed. T was also assigned a chapter for homework on “confronting your fear” (Antony & Watling, 2006).

Session 5 (Applied Tension and Exposure Preparation)

During Session 5, the fear hierarchy was finalized and applied muscle tension was introduced. T reported no phobic encounters during the previous week although he reported being more attentive to cues pertaining to potential fainting, anxiety, and fear. No changes were made to the fear hierarchy and T agreed to begin his first exposure exercise (placing tourniquet around his arm and touching his own veins, see Table 3). T stated that he wanted to conduct the first exposure on his own. Following this discussion, applied muscle tension was introduced as a method to prevent fainting. The following procedure and modeling was emphasized:

1. Find a comfortable chair. Begin by tensing the muscles of your arms, torso, and legs;
2. Hold tension for 10 to 15 s, release tension for 20 to 30 s, repeat 5 times;
3. You can practice measuring your blood pressure after this procedure to notice that this increases your blood pressure;
4. Practice this exercise 5 times per day during the next week; and
5. Use this exercise during exposure to “fainting items” following the first week of successful practice.

T was easily able to implement this procedure and reported being encouraged due to having an additional tool to combat his anxiety and fear. T was subsequently assigned a chapter reading for homework “Confronting your fear” (Antony & Watling, 2006).

Sessions 6 to 9

During Session 6, T reported immense success during the previous week with his first exposure item (wrapping a tourniquet around my arm and touching my veins) with a SUDS rating of 45. Client reported two trials with a peak SUDS rating of 40, noting that “it was fine.” T agreed to move on to the next item on his fear hierarchy with assistance from the therapist, which entailed watching a series of YouTube™ videos of various individuals receiving a Phlebotomy and describing their experiences during the procedure. During the first video, T reported a beginning SUDS rating of only 30. As the video progressed to the woman entering the area for which the Phlebotomy procedure would take place, T reported a SUDS of 35 after 5 min. As the woman narrating the video received a needle in her arm followed by blood flowing into a plastic tube, T began utilizing applied muscle tension and reported a SUDS rating of 35 and noted that it was “not bad.” Once the Phlebotomy bag was sealed and the needle withdrawn, T reported a SUDS of 20 and “slight nausea but not a big deal.” A second video was observed in which a male received a Phlebotomy. T reported a SUDS of 35 at the beginning of the video and a peak SUDS of 40 during the actual procedure, while noting “this one is queasier.” T utilized applied muscle tension and his SUDS quickly dropped to a rating of 20 as the individual described the importance of donating blood. T’s SUDS quickly dropped to 15 after a few minutes and he verbally expressed that “new learning” had taken place. T agreed to watch a third video in which a closer camera angle was employed and a male’s arm was graphically depicted with a tourniquet. A female lab technician instructed the male to move his arm as she inserted the needle when the male exclaimed “oh my God look at that!” T’s beginning SUDS was a 20 and quickly subsided to 15 after a few minutes after which he exclaimed, “I’m good.” T repeated these exercises for homework during the next week and reported that he would have his wife check his blood sugar by pricking his fingers.

At the beginning of Session 7, T reported that he successfully completed three trials of having his blood sugar checked by his wife. T noted that his SUDS began at a 45 and never peaked beyond this rating. T stated that he utilized applied muscle tension during the first two trials, but did not need to do so for the third and final trial. T also reported that he stared at the blood on his fingers for 5 min following the procedure. During Session 7, T brought his glucometer and reported a beginning SUDS of 45 prior to the procedure. T pricked his index finger and was instructed to examine the resulting blood. T noted that he was barely utilizing applied muscle tension during this procedure and reported a SUDS rating of 20. T continued to prick two more fingers individually, and reported a SUDS rating of 20 during both trials. T noted that he was “about there” and the remainder of the session was spent discussing his new learning, rational responses to medical procedures, and making arrangements for his next exposure to a local blood bank. For homework, T was instructed to utilize a glucometer until the client notes new learning and to watch more phlebotomy procedures on videos.

During Session 8, T and his therapist made arrangements and met at a local blood bank and simply requested to observe Phlebotomy procedures. It should be noted that T traveled 2.5 hr to his therapy appointments and was generally unfamiliar with the city in which the Phlebotomy took place. Confidentiality was maintained during this process. Based on local regulations, observation of Phlebotomy procedures requires a distance of 3 feet from the actual procedure. During the first Phlebotomy observation, T reported a SUDS of 65 in “anticipation” of the live procedure. Within 5 min, T reported a SUDS of 45. After 5 additional minutes, T observed the needle being inserted into a vein, the “blood bag” and the blood being drawn, and reported a SUDS of 30. T noted that he did not use applied muscle tension and that feelings of syncope were absent. His final SUDS for this procedure was reported as 5. T had a second opportunity to observe a Phlebotomy procedure and reported a beginning SUDS of 30 that quickly subsided to “nothing, 0.” T again noted that he did not need to use applied muscle tension. T reported feeling encouraged and that new learning had taken place. He further stated that he was ready to schedule his own phlebotomy in his hometown during the ensuing week.

At Session 9, T reported substantial progress. He noted that he successfully received his own phlebotomy and only minimally conducted applied tension at the beginning of the procedure. He further reported that his SUDS peaked at 40 and quickly subsided to “nothing.” Interestingly, T shortly thereafter received a similar phlebotomy procedure in his other arm and noted a peak SUDS of 25. During Session 9, T was motivated to take his own blood pressure in the presence of the therapist. T reported a SUDS of 55 prior to putting on the blood pressure cuff. As he tightened the blood pressure cuff, T reported a SUDS of 45, which quickly dropped to 35 after a few minutes. T’s SUDS further dropped to 20 after 5 min. T repeated this procedure, and his SUDS did not increase beyond 20. For homework, T was instructed to repeat this procedure until subjective new learning took place and to schedule getting blood pressure checked by a nurse. T reported that he would call the therapist next week to report “success” and would schedule an appointment if needed.

During the following week, T called the therapist and reported that he had successfully taken his blood pressure at local drugstores alone and with others visibly present. He further reported having his blood pressure taken by a nurse followed by a complete physical examination while at the doctor’s office. T reported that applied muscle tension was not needed during these procedures and that his SUDS were “rather low.” Furthermore, T noted that, “I’ve never felt better in my life” and reported that he was ready to discontinue treatment.

8 Complicating Factors

T’s case followed a somewhat predictable pattern for a structured, cognitive behavioral, protocol-driven case of specific phobia treatment (see Antony & Watling, 2006; Craske, Antony, & Barlow, 2006). However, there were some complicating factors worth noting that may have affected his treatment. First, although T’s overall symptomatology was best encompassed by a BII phobia, for which applied muscle tension alone is an effective intervention (Antony & Watling, 2006), T was also anxious about other medical procedures, cues, and contexts that would be considered non-invasive in nature that did not result in syncope. Moreover, T reportedly experienced situationally bound panic attacks that ostensibly required further use of cognitive behavioral treatment techniques in addition to applied muscle tension for syncope. Specifically, psychoeducation, objective recording, cognitive restructuring, and exposure appeared highly effective and necessary in addition to applied muscle tension. In addition, T was generally behaviorally inhibited and experienced considerable social anxiety as evidenced by his marked anxiety when at the barbershop. Although T’s utilization of cognitive techniques during this experience was reportedly effective, T may need to further address symptoms of social anxiety in the future. Furthermore, T reported symptoms of obsessive-compulsive disorder although

a diagnostic interview revealed that his symptoms were subclinical in nature. Nonetheless, T appears to be prone to obsessive thinking when under significant duress and anxiety. As such, these symptoms would need to be monitored in the future.

9 Access and Barriers to Care

T reported that the primary barrier complicating access to care was the absence of “structured cognitive behavioral therapy in [his] hometown,” which subsequently required him to commute a considerable distance (e.g., approximately 2.5 hr drive) to the clinic where treatment sessions took place.

10 Follow-Up

T contacted the therapist 4 months post treatment and reported that he had several doctor’s appointments pending. He further noted that the work that he completed was tremendously helpful and that he had completely overcome his BII phobia. Six months later (10 months posttreatment), T reported that treatment gain had been maintained and again thanked the therapist for his assistance with his BII phobia. Approximately 12 months following the completion of treatment, T returned several self-report questionnaires, which indicated that the efficaciousness of treatment was sustained. Specifically, T’s scores on the BAI reduced from 41 to 7, indicating that his anxiety levels were no longer severely impairing. In addition, in comparison with his pre-treatment responses on the FSS-II, T no longer endorsed having “very much fear” or “terror” of any items listed and notably reported reduced fear across all medical-related stimuli (e.g., blood, hypodermic needles, untimely death, illness, and death of a loved one). Finally, T originally reported experiencing all 17 sensations listed on the BISS; however, his post-treatment ratings indicate that only four sensations (i.e., feeling anxious, heart pounding, feeling nauseous, and sweating) are still experienced during exposure to medical-related stimuli.

11 Treatment Implications of the Case

This case demonstrates the successful treatment of a BII in an adult male patient. Prior to treatment, the patient had experienced vasovagal syncope when exposed to phlebotomy procedures as well as significant anxiety and panic when exposed to other medical procedures, contexts, and cues. Following psychoeducation, objective recording of symptoms, learning applied muscle tension and exposure, the patient was able to engage in medical procedures with minimal anxiety as well as without experiencing syncope. As aforementioned, treatment gains were maintained following termination of treatment.

The outcome of this particular case is supported by the empirical literature indicating that cognitive behavioral therapy, particularly exposure-based procedures, are highly effective for a plethora of phobias in a relatively short period of time (for review, see Antony et al., 2001; Barlow, 2002; Craske et al., 2006; Lang & Craske, 2000; Ayala et al., 2009). Furthermore, the aforementioned interventions relied on many ingredients of cognitive behavioral therapy including psychoeducation, self-monitoring, cognitive restructuring, exposure (Craske et al., 2006), and applied muscle tension (Antony & Wattling, 2006). Since this patient experienced vasovagal syncope, anxiety, and panic symptoms, the inclusion of various components of cognitive behavioral therapy appeared justified as evidenced by the treatment outcome.

Moreover, the treatment techniques that were used in this particular case appeared to result in the patient experiencing an increased sense of self-efficacy in addition to new learning taking place on exposure to phobic stimuli. As such, psychoeducation, objective recording, exposure of sufficient duration, and applied muscle tension as additional tools appeared to facilitate

new learning and self-efficacy in the previously described patient. Furthermore, the general structure of each session in addition to the collaborative nature of the treatment may facilitate treatment adherence and increase self-confidence in patients who may perceive themselves as helpless when encountering phobic stimuli. The “graduated” nature of exposure is further important to consider as this approach appears to further bolster patient self-efficacy by providing a sense of accomplishment during each encounter with phobic stimuli in a hierarchical fashion.

12 Recommendations to Clinicians and Students

This case study provides further evidence for the effectiveness of cognitive behavioral therapy and applied muscle tension in the treatment of BII phobia in adults. As the aforementioned case involved vasovagal syncope at exposure to blood and needles in addition to panic attacks at exposure to cues associated with medical procedures, cognitive and behavioral techniques were used rather than either alone. Results of the previously described intervention suggests that a structured, manualized approach (e.g., Antony & Wattling, 2006; MYFP; Craske et al., 2006) involving psychoeducation, homework, self-monitoring, cognitive restructuring, exposure, and applied muscle tension was effective in ameliorating symptoms in a time-limited fashion in an adult male who had experienced debilitating anxiety for much of his life. To substantiate the generalizability of these findings, randomized controlled trials examining the effectiveness of manualized cognitive behavioral therapy as compared with its individual components (e.g., dismantling design) would expand knowledge of how the application of the aforementioned therapeutic techniques can be applied to different BII phobia presentations. Nonetheless, follow-up data were collected at 4, 10, and 12 months post-treatment, in which the patient reported minimal distress and impairment suggesting continued success from the techniques used. Furthermore, though the current study does not identify one component of treatment solely responsible for the patient’s treatment outcomes, it is plausible that the ingredients of manualized cognitive behavioral therapy (e.g., psychoeducation, homework, objective self-monitoring, cognitive restructuring, exposure, applied muscle tension) synergistically facilitated new learning in the previously discussed patient. Moreover, it is recommended that clinicians and students-in-training maintain empirical data throughout treatment to quantify patient progress.

Although the effectiveness of the intervention strategies in the aforementioned case are well-documented elsewhere (for review, see Antony & Wattling, 2006; Ayala et al., 2009; Barlow, 2002; Craske et al., 2006), the results from this case are encouraging as the utilized interventions were protocol driven and time-limited in nature (nine treatment sessions). It should further be noted that the implementation of a treatment protocol requires flexibility on the part of the therapist and should be individualized to meet the patient’s needs. Furthermore, the MYFP (Craske et al., 2006) treatment protocol was designed to address a plethora of fears and phobias, although the authors suggest that clinicians individualize certain treatment ingredients of MYFP to uniquely address the patient’s reported fears. For example, the MYFP protocol includes suggested elements of cognitive behavioral strategies depending on the nature of the patient’s fears and phobias, subsequent to all patients receiving sequentially suggested treatment components (e.g., objective ratings of fear, fear acquisition, etc.). Furthermore, applied muscle tension along with psychoeducation about BII phobia (Antony & Watling, 2006) was added in a logical sequence following the suggested structure of the MYFP treatment protocol. Moreover, this underscores the importance of individualizing treatment and remaining flexible when utilizing manualized treatment approaches. Students and clinicians are also encouraged to find useful chapter readings that correspond with the patient’s fears and phobias as homework assignments to discuss at the beginning of each therapy session.

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