



SAYBROOK
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FIBROMYALGIA: THE CASE OF ELIZABETH

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FIBROMYALGIA DEFINED

- Fibromyalgia is a syndrome marked by the presence of pain throughout the musculature, often accompanied by a variety of seemingly unrelated symptoms
 - Fatigue, low energy, sleep disturbance, morning stiffness, symptoms of irritable bowel syndrome
 - Emotional symptoms such as depression and anxiety, and cognitive deficits.
- Fibromyalgia is disorder of pain amplification, which often follows a specific injury or illness.



REFERRAL: ELIZABETH

- Elizabeth -- 34 year old high school teacher, married, mother of three
- She was a physically active and athletic woman until a recent injury
- Referred by primary care physician for psychological treatment of depression accompanying fibromyalgia.



INJURY AND ONSET OF PAIN

- Elizabeth slipped on wet floor at school in October, fell into a row of student lockers
 - Sharp pain in her left shoulder, but still had full use of her arm and hand
 - Sought no medical care, continued work
 - Pain receded, then worsened over several weeks
 - She attempted to “work out” pain by swimming and stretching exercises



ONSET OF FIBROMYALGIA SYMPTOMS

- By January began to experience an “achy soreness” through shoulders, neck, and arms.
- The soreness became a burning sensation, more bothersome
- She reduced her swimming, began using heating pad on shoulders and arms
- Next pain receded in the upper body, and she noticed similar aching and burning in lower back, buttocks, and legs



ACCOMPANYING FIBROMYALGIA SYMPTOMS

- By January, the quality of sleep declined with delayed onset and frequent awakening.
 - Drowsy daytimes
 - Low energy
 - Poor concentration
 - Short term memory lapses



CONFUSING MEDICAL PROCESS

- Primary care physician referred her to an orthopedic specialist
 - X-ray of the upper torso and an upper body MRI
 - No positive findings on X-ray or MRI
 - Orthopedic specialist assessed problem as “slow healing” and “soft tissue damage”
 - Encouraged to “give her body time to heal,” and “avoid exertion”
 - Prescription of medication, Flexeril, for pain relief and relief of muscle tension and spasm
 - More edgy, irritable, and moody on Flexeril



EARLY ONSET OF DISABILITY

- With drowsiness, increasingly difficult to complete paperwork at school
- She reduced physical activities, and began to spend much of her non-work time resting in a recliner



LAY DIAGNOSTIC AND PROFESSIONAL DIAGNOSTIC PROCESS

- Elizabeth's sister noted that the symptoms resembled those of friend with fibromyalgia
- Self-referral to this friend's rheumatologist
 - He conducted screening, including identification of 13 tender points, the palpation of which elicited sharp pain.
 - Widespread pain in four quadrants of her body, enough tender points to meet American College of Rheumatology criteria for fibromyalgia.
 - Diagnosed Elizabeth with post-traumatic fibromyalgia, secondary to original work-site injury



INITIAL MEDICAL TREATMENT

- Prescription: *Gentle* exercise program, medication Amitryptaline to help her mood and sleep
- Reassurance: Fibromyalgia is a real disorder, sometimes disabling, with few effective treatments.
- Recommendation: Eight or more hours of sleep per night, since sleep deprivation seems to exacerbate many of the secondary symptoms of fibromyalgia.
- Iatrogenic effects: The physician instructed her to complete social security disability application.



ADVERSE MEDICAL EFFECTS

- Elizabeth was relieved to have the diagnosis, and mood lifted
- Primary care physician informed her: The fibromyalgia label was rheumatologist's way of labeling depression, and suggested psychotherapy



SELF-TREATMENT

- Elizabeth attempted running and over-zealous workouts, provoked severe episode of burning and debilitating pain.
- Tried to get more sleep, found herself awakening several times a night in pain,
- Daytime drowsiness and lethargy worse



GROWING CHRONICITY

- Cognitive deficits now more severe.
- New accelerated math program introduced in her school, she could not focus her mind
- Rheumatologist provided a letter, supporting long term disability
- The disability letter elicited episode of sobbing
- Her PCP made a second referral to a behavioral medicine clinic



PATHWAYS TREATMENT: REFRAMING THE DISORDER

- “We recognize the diagnostic signs here of fibromyalgia syndrome. This is a real medical disorder. Many people suffer a similar pain disorder; you are not alone. Help is available, and many people can manage their disorder and live more fully again. We can recommend life style changes, and teach you skills and knowledge that will help you to manage this condition. If that isn’t enough help, we can give you the names of other fibromyalgia specialists, who will help you to manage your condition.”



PATHWAYS ASSESSMENT

- Initial evaluation
 - Daily pain log.
 - Diary of physical activity.
 - First week: fibromyalgia pain reached at least 8-9 daily
 - Activity diary was nearly empty.
 - She had learned to avoid activity, because it hurt



AFFECTIVE ASSESSMENT

- Patient was clinically depressed at assessment
- No history of previous depressive episodes
- No history of traumatic episodes
- No severe life stressors
- No indications that emotional events or states triggered the onset of pain
- The emotional condition appeared to be a response to pain and disability



PATHWAYS LEVEL ONE INTERVENTIONS: SELF-GUIDED INTERVENTIONS

- Movement -- pleasurable movement, gentle movement, learning to pace herself and not over-exert
- Slow dancing to music with pre-school daughter, using graceful swaying movement.
 - It felt good although she could feel muscle soreness more acutely
- She also decided to walk her daughter two blocks to the nearby park



PATHWAYS LEVEL ONE INTERVENTIONS: SELF-GUIDED INTERVENTIONS

- Mindful Breathing – smooth, effortless, paced breathing, from diaphragm
 - Initially had some difficulty with pacing her breathing
 - She was alternately breath holding and breathing very rapidly
- Therapist introduced her to EZ-Air Plus™, a downloadable breath pacer
 - Initially set the EZ-Air Plus at nine breaths a minute, because this seemed slow for her.
 - Later shaped to six breaths a minute



PROGRESS WITH LEVEL ONE INTERVENTIONS

- As long as she kept the music soft and slow paced, the movement felt good to her
 - She experienced tingling in her musculature that confused her
- She found breathing soothing, and within one week had pacer set at six breaths
 - She reported less of an edgy, irritable feeling with paced breathing
- Both daughters (ages 4 and 8) joined in EZ-Air Plus sessions



PATHWAYS LEVEL TWO: LEARNING WITH EDUCATIONAL MATERIALS AND COMMUNITY RESOURCES

- Aquatherapy, gentle graded exercise, three times/week, in therapeutic pool with water temperature in mid 90's
 - Initial PT evaluation by Aquatherapy team showed some body bracing and mild twisting in posture, with left sided tensing, and restricted range of motion in all quadrants.
 - Even in warm water, Elizabeth found that she needed to stop and rest after 10 minutes of exercise



PATHWAYS LEVEL TWO: LEARNING WITH EDUCATIONAL MATERIALS AND COMMUNITY RESOURCES

- “Gentle Yoga” -- Elizabeth began gentle yoga after six weeks of aquatherapy.
 - Emphasis on initial meditation, with yogic breathing
 - Instructor added one to two Hatha yoga asanas each week
 - Encouraged to accept the slow pace, and enjoy process of re-acquaintance with body and musculature
 - She bought yoga DVD, tried to move ahead faster, triggered a flare up of fibromyalgia pain, and accompanying flare up of irritability and depressed mood.



MEDICAL INTERVENTION

- Additional medication, Lyrica, added to moderate pain and assist sleep.
- This induced day time drowsiness, but Lyrica moderated fibromyalgia pain and improved her ability to tolerate water based exercise and yoga



PATHWAYS LEVEL THREE: PROFESSIONAL MIND-BODY INTERVENTIONS

- Heart rate variability (HRV) biofeedback – addresses dysregulation of autonomic nervous system in fibromyalgia
 - HRV biofeedback has been shown to moderate depressed mood (Karavidas, et al., 2007)
 - HRV biofeedback has been shown to reduce both pain and depression in fibromyalgia (Hassett et al., 2007)
 - Healthy human beings have higher variability in heart rate
 - HRV is index in medical research for healthy autonomic function, cardiovascular health, and emotional health



ELIZABETH: HRV ASSESSMENT

- Baseline patterns in respiration and heart rate variability
 - Overall heart rate variability low, for a thirty four year old woman
 - “SDNN” – the standard deviation of the interbeat interval of her heart beat – was 44 milliseconds
 - Mean oscillation in her heart rate, the “HeartRateMaximum minus the HeartRateMinimum,” was 5 beats
- HRV Assessment
 - Her Resonance Frequency – the breathing rate producing greatest HRV – was 5.5 breaths per minute



RESONANCE FREQUENCY PROTOCOL

- This is the protocol developed by Paul Lehrer, Evgeny Vaschillo and Bronya Vaschillo.
- Lehrer, P.M., Vaschillo, E., & Vaschillo, B. (2000). Resonant frequency biofeedback training to increase cardiac variability: Rationale and manual for training. *Applied Psychophysiology & Biofeedback*, 25(3), 177–191.



HRV BIOFEEDBACK TRAINING

- Breathing practice at 5.5 BPM in office and at home
 - Pursed lips breathing, from diaphragm
 - Effortless mindful breathing
- HRV biofeedback sessions,
 - Smoothing HR oscillations
 - Learning to time inhale as HR increases, augmenting HR increase
 - Extending exhale to a ratio of 2:1 with inhale
 - Training to increase LF % in HRV spectral display



HRV BIOFEEDBACK PROGRESS

- HR Max – HR Min increased to 14 beats in training sessions
- SDNN increased to 110-120 in training
- Basal HRV slowly improved
 - Baseline SDNN remained in “compromised” range
 - Baseline HR Max-HR Min increased to 11 beats



PATHWAYS LEVEL THREE INTERVENTION: SEMG (MUSCLE) BIOFEEDBACK TRAINING

- Initial evaluation showed abnormal patterns in muscle tension
 - Asymmetry in muscle tension between the muscles along the right of her spine and those on the left, with the left side showing substantially greater elevation in muscle tension
 - Co-activation patterns: When she turned her head, there was a recruitment of muscle activation in the lumbar paraspinal muscles, which are functionally not assistive for this movement
 - Muscles of the shoulder and neck showed severe elevation in muscle tension readings (at some sites greater than 30 microvolts), and poor capacity for relaxation



ELIZABETH: MUSCLE BIOFEEDBACK TREATMENT

- Training: muscle biofeedback to learn greater awareness and control over the musculature of her body.
- She learned to recognize sensations of tense and relaxed muscles through muscle biofeedback
- She showed improved left/right muscle symmetry and more balanced posture
- The baseline tension in her upper back and shoulder musculature was less than 2 mV at several sessions



LEVEL THREE PROGRESS

- Elizabeth discovered commonality among her Aquatherapy, gentle yoga, and SEMG training
 - Her muscle awareness increased exponentially
 - She noticed tensing reactions in her back and shoulders, when yoga elicited a burning sensation, and learned to abort the tensing



PATHWAYS LEVEL THREE: PROGRESS

- Significant improvement in fibromyalgia pain levels
 - Many days in which the pain levels never exceeded 4 or 5
- Activity diary showed a return to more normal activities, including aquatherapy, housework



WORK REHABILITATION ISSUES

- Elizabeth spoke with her principle about a return to work
 - Initially the school system HR office demanded a statement of 100% rehabilitation, with pain free status prior to return, and a return to full time status
 - Her teachers' union negotiated a step-wise return based on current status



SELF-IMAGE AND SELF-EFFICACY

- The onset of fibromyalgia pain had severely threatened this once athletic woman
- The use of a self-guided and self-regulation based Pathways plan facilitated a positive recovery of her confidence
- She became a missionary for the value of becoming engaged in one's own health care



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