

## **CASE STUDY**

### **REFLEXOLOGY AND THE AFFECTS ON MARFAN SYNDROME**

Therapist: KEN COOK

Florida-licensed massage therapist MA69745,

Certified Hand & Foot Reflexologist (Graduate of the Academy of Ancient Reflexology)

kencooklmt@gmail.com

#### **INTRODUCTION**

Mayo Clinic describes Marfan Syndrome (MFS) as an inherited disorder that affects connective tissue most commonly in the heart, eyes, blood vessels and skeleton. According to an article in Nature Genetics (6, 64-69 1994), the syndrome is carried by the gene FBN1 that encodes the connective protein fibrillin-1. MFS was named after Antoine Marfan, the French pediatrician who first described the condition in 1896. Almost a century later, in 1991, Hal Dietz and Francesco Ramirez identified the gene linked to the disease.

#### **EPIDEMIOLOGY**

MFS occurs when the gene that encodes for connective tissues strength and elasticity is damaged. Most commonly this is found to be a familial disorder where a child with an affected parent has a 50-50 chance of inheriting the defective gene. In approximately 25% of cases, the condition is not inherited and the gene spontaneously mutates. Overall, MFS affects males and females equally and the mutation shows no ethnic or geological bias. Current estimates indicate about 1 in 3,000- 5,000 individuals have MFS. Approximately 15–30% of all cases are due to de novo genetic mutations; such spontaneous mutations occur in about one in 20,000 births (Cotran; Kumar, Collins (1998).Robbins Pathologic Basis of Disease. Philadelphia: W.B Saunders Company. ISBN 0-7216-7335-X).

#### **SYMPTOMS/COMPLICATIONS**

There are over thirty signs and symptoms associated with MFS thus making it difficult to determine whether a person has the disorder by appearance alone. In 1996 the Journal of Medical Genetics published an article with revised clinical criteria which indicated cardio-vascular manifestations, specifically aortic root aneurysm and ectopia lentis to be the cardinal clinical features. In the absence of family history, the presence of these two manifestations is sufficient for the unequivocal diagnosis of MFS.

According to the Mayo Clinic, signs and symptoms vary greatly even among members of the same family. While some experience only mild effects, others develop life-threatening complications. In most cases the disease tends to worsen with age.

#### **Signs and Symptoms include:**

- Tall, slender build
- Disproportionately long arms, legs, fingers and toes
- A breastbone that protrudes outward (pectus carinatum) or inwards (pectus excavatum)
- High arched palate & crowded teeth
- Heart murmurs/Mitral valve prolapse
- An abnormally curved spine/scoliosis
- Flat feet

- Undue fatigue
- Extreme nearsightedness
- Ectopia lentis (Detached retina and subluxation of the crystalline lens in one or both eyes.)
- Dural ectasia (Weakening of the dural sac encasing the spinal cord)

Since MFS weakens the body's connective tissue and can affect almost any part of the body, it causes a wide variety of complications. The most severe complications result from pathologies in the aortic root and ascending aorta. The aortic media is affected preferentially in areas subject to the greatest hemodynamic stress (Merck 2008).

## **PRIOR RESEARCH**

After extensive research of all major medical and alternative medicine journals, it was determined that no previous studies involving Reflexology and Marfan syndrome have been conducted.

## **SUBJECT**

The subject is a 55 year old female who is unemployed due to her condition. MFS manifested at age 34, although testing indicated that it was congenital. In 1993 her son was diagnosed with MFS while having his eyes examined by an ophthalmologist. She was examined as well and referred to a cardiologist where she was diagnosed with mitral valve prolapse (MVP). She was then referred for genetic testing and was diagnosed with MFS. Client reports the syndrome is affecting her in the following areas:

- Constant "horrific" pain in her legs. OTC ibuprofen as needed, which she reports is not often.
- Legally blind in her left eye and completely blind in her right.
- Scoliosis; degree of curvature unknown
- Colonoparesis, or as she states the "colon has lost its elasticity", causing slowed transit constipation where she "has bowel movements once every two weeks".
- Dizziness, 5-6 spells a day to the point of passing out or vomiting.
- Throbbing vein in her head which causes an ear ache.
- Restless nights, with a pattern of 30 minutes sleeping followed by 2-3 hours of wakefulness, repeated throughout the night. She states she does not feel tired or fatigued.

Client also states that she had cataracts removed from her left eye at the end of 2005 and her right eye at the beginning of 2006. Both of her lenses were dislocated therefore new lenses were implanted; unfortunately she remains blind.

During the opening interview with health history, client reported she had never experienced reflexology before. She did state that she has felt like a "guinea pig" because of all the tests and surgical procedures she has endured. In addition to the above listed complaints she also noted "headaches", "back pain- scoliosis", "numbness", and "decreased circulation" on the intake form.

## **TREATMENT**

Reflexology was the only modality used. No oils, lotions, foot soak, wax dip, music or aromatherapy were used at any time. Hour long Reflexology sessions were scheduled every other day at 1pm for a total of 6 visits. The sessions began November 15, 2013 and ended November 15, 2013 (see figure 1, session notes). The following areas were targeted during these sessions:

- Digestive system reflexes: client reports she has bowel movements once every two weeks
- Lower leg reflexes: client complains of lower leg pain.
- Entire spinal reflexes: innervations for lower leg area where she can't feel hot water and innervations to the digestive system.
- Pineal gland: client reports restlessness; the pineal gland reflex was addressed to help restore balance to her circadian rhythm and sleep pattern.
- Diaphragm and solar plexus reflexes: for general overall relaxation.

Client was instructed to keep a daily log of sleep patterns, bowel movements, and meals eaten during this time. She was also told to record any other changes with her body during the six sessions and for a period of 30 days after the last session.

## **RESULTS**

Reflexology helped improve several areas of concern for the client. While some improvements were immediate, others improved over various sessions. She experienced positive changes with bowel movements, sleeping habits, appetite, energy levels, and cessation of dizzy spells.

Client was previously having bowel movements once every two weeks, as indicated on her intake form. It was also noted that her last bowel movement was on November 11, six days prior to the first session. As can be seen in table 1, regular bowel movements began on November 17, in between the first and second session. Over the study's duration of 39 days, client missed bowel movements on only 12 days.

Client previously reported that she was experiencing restless nights and could not sleep uninterrupted. After the second Reflexology session, as seen in figure 2, her first night of uninterrupted sleep occurred and she slept for 7 hours and 45 minutes. Client also reports she begins to "nod off" around 9 pm and misses the late night television shows she used to watch.

Client reports that her appetite has increased (see table 3, meal log), though she states that she has lost weight. She attributes this to restful night's sleep which is allowing her to be more active instead of staying in bed all day.

Since beginning the Reflexology sessions, client states that it has also helped in lowering her stress levels and reports she feels more at ease. These improvements remained at the 30-day follow-up from her last reflexology session.

## **CONCLUSION**

The results of this study are promising but it's not possible to say from one case study what the affects would be on a larger population of people with Marfan syndrome. Of the issues this client dealt with on a regular basis it was obvious there were certain ones such as MVP and blindness that were more than likely not going to be affected. Others such as her sleeping patterns and bowel issues could potentially change with the use of Reflexology, which this study showed to occur. Anyone with MFS dealing with the same issues as my subject (irregular sleep pattern, infrequent bowel movements, and dizzy spells) could potentially experience the same positive changes with Reflexology.

Currently, MFS is considered incurable, although that does not mean patients should have to suffer with symptoms on a daily basis. There should be an option of dealing with certain

symptoms without the use of medications. The efficacy of Reflexology in this study supports the exploration of its use on a larger scale.

### Figure 1. **Session Notes**

The following includes both subjective (client) and objective (therapist) notes taken before, during, and after each session.

#### 11/15/13: Session #1

##### Subjective:

Client reports prior to session “no headache”. “A little anxious because I don’t know what’s going to happen”.

During session client reported she noticed no areas of sensitivity.

After session client reports:

The carpet has a different feel to it. “It’s weird”; “my feet feel light”; “easy walking”

##### Objective:

LFP

I felt congestion in two places on right big toe in brain reflex, one point on descending colon reflex and sigmoid colon reflex.

#### 11/17/13: Session #2

##### Subjective:

Client reports prior to session: “In the last two days I haven’t had any dizzy spells”. I told her she had not mentioned that in health history or initial interview. She had not told me this so it was never a focus. She said she would pass out or vomit during the spells. She reported that about two years ago she passed out for about 20 minutes. At this point she decided to stop taking morphine & the other drugs she was taking at the time. She said she doesn’t give the dizzy spells much thought because she has always had them. "I broke my toe about three years ago. After my first session I could not feel any pain in it at all". She told me she has tried to find the pain but can't. Client reports that her sleep is deeper, “much better”, “not anxious”, “nothing going on”.

##### During session

While on her left foot client reports no tender spots. I worked her left foot first and she said, “It feels like it has been worked on, like it has juices flowing”.

##### After session

Client reports feet feel tingly and carpet feels soft.

##### Objective:

RFP

Great toe brain and sinus reflexes, epiglottis reflex

Zone 2 diaphragm reflex

Zone 3 between diaphragm line & waist line- small intestine reflex

LFP

Great toe brain & sinus reflexes, occipital ridge reflex

Zone 1 heart reflex, pelvis/hip reflex

Zone 5 diaphragm reflex

11/19/13: Session #3

Subjective:

"Last night I slept 7 hours & 45 minutes. I haven't done that in years". "I feel fine".

After session

"Everything feels fine"; "feel so relaxed"

Objective:

RFP

Zone 1 liver reflex

Zone 4 small intestine reflex

LFP

Great toe- brain and sinus reflexes

Zone 5- diaphragm reflex

Zone 1- small intestine reflex, ureter reflex on longitudinal tendon

11/21/13 Session #4

Subjective:

Client reports nothing going on "I'm able to cope better with stress at home"

During

Client noticed a different sensation in two areas. Not painful just "different"

LFP zone 1- stomach and transverse colon reflexes

After

"I feel really good", "I have more energy on a daily basis"

Objective:

RFP

Great toe- brain and sinus reflexes

Zone 2- small intestine reflex

LFP

Great toe- hypothalamus, pineal & pituitary gland reflexes

Great toe- occipital ridge reflex

Zone 1- shoulder line reflex

Zone 2- stomach reflex, transverse colon reflex and kidney reflex

11/23/13 Session #5

Subjective:

Client reports that when taking a bath she would only use hot water because she couldn't feel the hot water on her legs, so hot that her skin would peel. She hasn't taken a bath since our sessions started - when we stopped laughing she said she has been taking showers.

Client reports her appetite has definitely improved. "I am more at ease, things don't bother me as much".

During session

After finishing her left foot she said, "It feels lighter, the right foot is just sitting there."

Objective:

RFP

Great toe- entire brain reflex on tip of GT, pineal gland reflex, hypothalamus reflex

Zone 5- hepatic flexure reflex

Zone 2- kidney reflex

Zone 1- iliac crest reflex

LFP

Great toe- pineal and hypothalamus reflexes

Zone 4- transverse colon reflex

Zone 2- small intestine reflex

Client felt in zone 2- small intestine reflex

After session

"Now both feet feel the same"

Client reports "some burning (on the fallopian tube reflexes) on both feet like something stretching".

Her homework after this session is to take a bath. I expressed the importance of taking notes of any changes no matter how small it may seem to her. I commented on her colorful clothes she wore today. She said she usually stayed in her pj's all day because she thought "What's the point"? She shares that she has had more energy and a more positive attitude coupled with a less stressful feeling. We have one session left and I'm looking forward to see what happens over the next 30 days. She said that she can't believe how much of an appetite she has now. She reports no dizzy spells.

### 11/25/13 Session #6

Subjective:

Client reported that she took a bath & had to add cold water to the water because it was too hot. She could feel how hot the water was. She said "Holy \*\*\*\* that's hot"! Another insight from her was regarding her bedtime. It's usually 10:30 but as late as 1:30 am. She would like to go to bed earlier but says she has had an increase in coffee consumption. In her words "a craving". She says she will try to stop drinking coffee all together or at least no coffee after 4 pm. "Not feeling anything particular today" Client reports she has been craving coffee. "Never was a coffee drinker". She says it probably started prior to sessions but it has increased.

Objective:

LFP

Great toe- brain and sinus reflexes, hypothalamus reflex

Zone 1- parathyroid reflex, heart reflex,

Zone 2- small intestine reflex

Zone 4 & 5- diaphragm line reflex

RFP

Great toe- brain reflex, hypothalamus reflex

Zone 1- thyroid reflex, thymus reflex

Right foot medial client felt this  
Uterus reflex

Follow-Up Notes

12/11/13:

Checked in with client, she is keeping up with daily log and reports that nothing has changed. No dizzy spells, eating well, regular bowel movements & sleeping all night.

12/21/13:

Checked in with client to tell her she can stop with her journal on December 25 and I will pick it up on January 6, 2014. She said "Everything is perfect". She said she can't stay up and watch her TV shows because she starts to nod off at 9:00 pm.

1/3/14:

Spoke to client before writing results so see if there was anything else she wanted to add. She said her "energy is really up". "I am awake all day and sleep all night". Client reports her leg pain has decreased but she figured its because she is more active & the pain has diminished. Her legs still feel hot water temperatures. She has lost weight; she is eating more and having frequent bowel movements. I recommended she inform me if any of the results begin to fade and she begins to experience any of her prior symptoms. She said she would and I told her we can do a maintenance session if necessary.

Table 1. Digestive Log

Client instructed to record date and time of any bowel movements.

Date	Time
11/17	9:30 am
11/18	1:50 am
11/19	6:00 pm
11/20	8:30 am & 4:30 pm
11/21	5:00 pm
11/22	None
11/23	4:15 pm
11/24	9:00 am
11/25	None
11/26	None
11/27	9:30 am
11/28	9:15am & 6:00 pm
11/29	None
11/30	None
12/1	None
12/2	2:00 pm
12/3	12:30 pm
12/4	7:00 pm
12/5	None
12/6	3:00 pm

<b>12/7</b>	10:00 am
<b>12/8</b>	10:00 am
<b>12/9</b>	9:00 am & 5:00 pm
<b>12/10</b>	4:00 pm
<b>12/11</b>	11:00 am
<b>12/12</b>	None
<b>12/13</b>	None
<b>12/14</b>	8:00 am
<b>12/15</b>	None
<b>12/16</b>	None
<b>12/17</b>	1:15 pm
<b>12/18</b>	None
<b>12/19</b>	12:15 pm
<b>12/20</b>	4:00 pm
<b>12/21</b>	2:00 pm
<b>12/22</b>	3:00 pm
<b>12/23</b>	1:15 pm
<b>12/24</b>	9:15 am
<b>12/25</b>	8:30 pm

Figure 2. Sleep Log

Client instructed to record sleep pattern.

11/15/13: Session #1

1:10 am sleep

2:25 am awake

3:10 am sleep

4:30 am awake

6:45 am sleep

8:30 am awake

Total hours slept: 4 hours 20 minutes

11/16/13

10:30 pm sleep

12:50 am awake

1:30 am sleep

2:14 am awake

3:30 am sleep

6:05 am awake

7:00 am sleep

9:00 am awake

Total hours slept: 7 hours 39 minutes

11/17/13: Session #2

1:30 am sleep

3:45 am awake

4:00 am sleep

7:30 am awake  
Total hours slept: 5 hours 45 minutes

11/18/13  
11:30 pm sleep  
7:15 am awake  
Total hours slept: 7 hours 45 minutes (uninterrupted)

11/19/13 Session #3  
1:00 am sleep  
7:30 am awake  
Total hours slept: 6 hours 30 minutes

11/20/13  
12:00 am sleep  
7:30 am awake  
Total hours slept: 7 hours 30 minutes

11/21/13 Session #4  
12:30 am sleep  
7:00 am awake  
Total hours slept: 6 hours 30 minutes

11/22/13  
1:00 am sleep  
8:00 am awake  
Total hours slept: 7 hours slept

11/23/13 Session #5  
1:30 am sleep  
7:30 am awake  
Total hours slept: 6 hours

11/24/13  
1:00 am sleep  
7:00 am awake  
Total hours slept: 6 hours

11/25/13 Session #6  
11:30 pm sleep  
7:30 am awake  
Total hours slept: 9 hours

11/26/13: 12:00a-7:00a, 7 hours  
11/27/13: 11:00p-8:30a, 9.5 hours  
11/28/13: 11:30p-5:30a, 6 hours  
11/29/13: 11:00p-5:00a, 6 hours  
11/30/13: 9:00p-7:00a, 10 hours  
12/01/13: 9:30p-6:30a, 9 hours

12/02/13: 8:30p-5:00a, 8.5 hours  
 12/03/13: 2:00a-6:00a, 4 hours  
 12/04/13: 9:00p-6:30a, 9.5 hours  
 12/05/13: 8:30p-7:00a, 10.5 hours  
 12/06/13: 9:00p-5:30a, 8.5 hours  
 12/07/13: 11:00p-6:00a, 7 hours  
 12/08/13: 10:30p-7:30a, 9 hours  
 12/09/13: 11:00p-6:30a, 7.5 hours  
 12/10/13: 10:00p-6:30a, 8.5 hours  
 12/11/13: 10:30p-7:00a, 8.5 hours  
 12/12/13: 10:30p-6:00a, 7.5 hours  
 12/13/13: 10:00p-7:00a, 9 hours  
 12/14/13: 11:00p-6:30a, 7.5 hours  
 12/15/13: 1:00 a-7:30a, 6.5 hours  
 12/16/13: 11:30p-6:30a, 8 hours  
 12/17/13: 12:30a-7:30a, 8 hours  
 12/18/13: 10:00p-7:00a, 9 hours  
 12/19/13: 11:00p-6:15a, 7 hours 15 minutes  
 12/20/13: 9:30p-7:00a, 9.5 hours  
 12/21/13: 12:00a-6:30a, 6.5 hours  
 12/22/13: 11:00p-8:00a, 9 hours  
 12/23/13: 10:30p-6:00a, 7.5 hours  
 12/24/13: 11:00p-6:30a, 7.5 hours  
 12/25/13: 10:30p-6:30a, 9 hours

Table 2. Meal Log

Client instructed to document food intake.

Date	Time	Food
11/16	5:30a	Pastry
	2:00p	Vegetable soup
	6:30p	Vegetable soup
11/17	4:00p	Vegetable soup
	4:30p	Cheesecake
	8:00p	3 slices pizza
11/18	12:00p	Chicken breast
11/19	11:00a	Veg soup
	4:00p	Chicken & french fries (ff)
	9:00p	Two oranges
11/20	12:30p	Chicken,ff & cheesesticks
	4:00p	Candy bar
11/21	8:50a	Donuts
	4:00p	Pork chops, mac & cheese
11/22	7:30a	Donuts
	1:00p	Mac & cheese
	8:00p	2 slices pizza
11/23	8:30a	Donuts

	12:00p	Salad
11/24	8:00a	Cheesecake
	3:00p	Spaghetti
	10:00p	Spaghetti
11/25	12:00p	Turkey,ff & salad
11/26	8:00a	Cheesecake
	9:30p	3 slices pizza
11/27	12:00p	Salad
	5:00p	Salad
11/28	4:00p	Ham,potatoes,corn,dressing
11/29	1:00p	Potatoes, dressing
	3:30p	Turkey, ff
11/30	5:30a	Donut
	12:00p	Tuna & ff
	6:00p	Thanksgiving leftovers
12/1	11:00a	Chicken & broccoli
	6:30p	Chicken & ff
12/2	7:30a	Pancakes
	6:30p	3 slices pizza
12/3	6:30p	Soup
12/4	8:30a	Pancakes
	5:30p	Lasagna
12/5		Sick, no food
12/6	12:30p	Buffet
	7:30p	Chili
12/7	7:00a	Bacon & cheese biscuit
	5:00p	Cheese sub
12/8	8:00a	Pie
	9:00p	Stuffed mushroom
12/9	12:30p	Chicken & fries
12/10	7:00a	3 cookies
	3:30p	Roast & noodles
12/11	10:00a	Noodles
12/12	10:00a	Noodles
	4:00p	Manicotti
12/13	7:30a	3 cookies
	2:00p	Chili
	4:30p	Grilled cheese & chili
12/14	10:30a	Chili
	5:00p	Cheesecake
12/15	12:00p	Chicken & ff
	8:00p	2 slices pizza
12/16	8:30a	Cheesecake
	11:30a	Salad
	9:00p	Chili

12/17	12:00p	½ taco salad
	4:30p	½ taco salad
	8:00p	Beefaroni
12/18	8:00a	Blueberry muffin
	5:00p	Pizza & wings
12/19	8:30a	Blueberry muffin
	11:30a	Salad
	4:30p	Salad
12/20	12:30p	Blueberry muffin
	2:00p	Fajitas
	6:00p	Beefaroni
12/21	12:30p	½ Chinese food
	5:00p	½ Chinese food
12/22	1:00p	Steal & potatoes
	7:00p	Beefaroni
12/23	11:00a	Salad
	5:00p	Manicotti
12/24	7:00a	2 donuts
	2:00p	Beefaroni
	7:30p	Ice cream
12/25	7:00a	2 donuts
	11:00a	Chips
	7:00p	Christmas dinner