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Original Articles

- ❖ McKee N, Kruse R, Rogers C. Disc Protrusion with Annular Fissure and Radiculopathy Treated with Cox Technic Flexion Distraction Decompression: A Case Report. *JIANM*. 2024;21(2):2-10.
- ❖ Kavanagh K, Parrilla D. The Role of a Chiropractor Upon Presentation of Dermatomyositis to a Chiropractic Clinic: A Case Report. *JIANM*. 2024;21(2):11-18.

Disc Protrusion with Annular Fissure and Radiculopathy Treated with Cox Technic Flexion Distraction Decompression: A Case Report

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ABSTRACT

Background: Low back pain has various underlying causes, with disc protrusions and annular fissures leading to discomfort and disability. The objective of this paper is to present a case of successful treatment of lumbar disc herniation, annular fissure, and radiculopathy using a multimodal treatment approach including Cox Technic Flexion Distraction Decompression.

Clinical Features: A 26-year-old male presented to the chiropractic clinic with low back pain radiating to the left lower extremity and reported loss of sensation in the lateral aspect of the left lower leg. Despite temporary relief with high velocity low amplitude spinal manipulation, his pain persisted and worsened, leading him to take medical leave 30 days after his injury, which he had been on for 3 weeks at presentation. He described his pain as constant and intense, rating it 8-10/10 on the Numeric Rating Scale (NRS). He reported pain in all ranges of motion, with exacerbation during active range of motion in lumbar flexion and left rotation. Orthopedic and neurological tests indicated he could tolerate flexion distraction with ankle straps. MRI indicated an L5-S1 disc protrusion causing S1 nerve root displacement, and an L4-L5 disc protrusion and annular fissure. Despite L5-S1 appearing more problematic, the L4-L5 disc protrusion and annular fissure most likely caused more pain, considering the inflammatory response and L5 symptoms.

Intervention/Outcome: Treatment included Cox Technic Flexion Distraction Decompression, end-range loading exercises, other home/rehabilitation exercises, soft tissue therapies, and supplements. The patient was treated three days per week over the course of 2-3 weeks. After the 6th visit, the treatment frequency was reduced to once per week. By the 9th treatment, he reported a reduction in his low back pain rating it as 1-3/10 on the NRS. At the last visit, he continued to experience pain relief, with low back pain occurring if he sat too long with a rounded back or was bent over too long at work. Ergonomic and lifting techniques were discussed and sit-to-stand/box-squats were introduced.

Conclusion: This case highlights the effectiveness of conservative management for lumbar disc herniation and annular fissure. This patient experienced pain relief with multimodal approaches to pain management including chiropractic flexion-distraction.

Key Words: Chiropractic, Manipulation, Flexion Distraction, Disc Herniation, Decompression, Case Study

INTRODUCTION

Low back pain (LBP) is the leading cause of disability globally, and it is one of the top reasons people seek medical assistance or miss work.¹ LBP has numerous underlying causes. Two common types of LBP are from disc protrusions and annular fissures, both of which can be severely painful for an individual, often resulting in costly treatment, medication, and/or surgery, as well as time off work.² Prior studies have demonstrated that conservative management can help reduce health care costs and improve outcomes for patients with LBP.^{2,3} A variety of different conservative management options are available and recommended for LBP, including exercise, non-steroidal anti-inflammatory drugs, and spinal manipulation.³ Flexion-distraction spinal manipulation, a form of low velocity spinal manipulation, has been suggested as an effective treatment option for reducing LBP and addressing issues with lumbar disc pathology.⁴ Cox Technic Flexion Distraction Decompression (CTFDD) is a conservative treatment for LBP that is well-researched and evidence-based. It provides non-surgical decompression to the discs, joints, and nerves, providing a vacuum-type effect on the disc.⁵⁻⁷ The purpose of this case report is to demonstrate the effectiveness and benefits of conservative management for a lumbar disc protrusion annular fissure, and radiculopathy using CTFDD as the primary treatment approach. This approach was useful particularly because previous spinal manipulative approaches had not produced positive, sustained results for the patient.

CASE PRESENTATION

A 26-year-old male presented to a chiropractic clinic with LBP radiating to the left lower extremity with a reported loss of sensation in the left lower leg. A review of systems and past medical history did not reveal any significant findings. He denied any history of cancer, fractures, or injuries. He is employed as an automotive mechanic and reported that his symptoms began while at work. He recalled twisting and reaching “awkwardly,” which caused a pain in his low back. He reported that the LBP worsened over the next week, which

prompted him to seek care from a chiropractor who performed high velocity low amplitude (HVLA) spinal manipulation, which did not alleviate his LBP. A week later, he sought treatment from another chiropractor who provided 2 or 3 similar treatments that provided some relief for his nerve (leg) pain, but not for his back pain. The patient stated that despite this temporary relief, the pain persisted and got “worse”. He continued to work for approximately 1 month following the injury, however, his pain became so severe that he had to take medical leave, which he had been on for 3 weeks by the time of his presentation.

During his medical leave he had also sought care from an urgent care facility where he was prescribed a steroid dose pack and ibuprofen. Both treatments provided temporary relief but did not eliminate the LBP.

Initial Examination

The patient presented using a crutch on the left side and was unable to fully bear weight on the left leg. He also exhibited an antalgic posture that was forward flexed with right lateral lean. During the initial examination, he described his pain as a constant and intense pain of 8-10/10 on the Numeric Rating Scale (NRS) for pain.⁸ He described his pain as starting in the low back and radiating down the posterior aspect of the left thigh, lateral lower leg, and to the ankle. While weight-bearing on the left leg, he reported experiencing a sharp pain in his lower back along with tingling and numbness down his left leg.

Palpation revealed pain at the L4-S1 region over the spinous processes and left transverse process region. In addition, hypertonicity and tender points were found in the left lumbar erector spinae muscles, quadratus lumborum, lumbar multifidi, deep gluteal rotators/piriformis, hamstring muscle group, gastrocnemius, and soleus.

The patient reported pain in all active ranges of motion, with an exacerbation of his symptoms during flexion and left rotation. The range of motion was decreased in all directions, most notably flexion, left rotation, and left lateral flexion.

Physical and orthopedic examination findings are presented in **Table 1**.

ORTHOPEDIC TESTS	Positive (+)	Negative (-)
Dejerine's Triad (cough, sneeze, strain)	x	
Minor's Sign - left	x	
Straight Leg Raise (SLR) - left	x	
Yeoman's	x	
Neer-Bowstring - left	x	
Slump-Aid – left	x	
Well Leg Raise – left low back & leg pain	x	
Hibbs – left low back pain	x	
End-range Loading – flexion	x (repetition reduced LBP & Leg Pain)	
Extension – LBP and Leg Pain	x	
Lateral Flexion – LBP and Leg Pain	x	
Babinski's		x

Table 1

His reflexes were 2+ bilaterally. The patient had a reduced general sensation to light touch in the left lateral and posterior calf compared to the right, while all other dermatomes were intact in the lower extremity. Manual muscle testing was graded at 4/5 with knee flexion and extension, and hip flexion and plantar flexion on the left were likely reduced due to pain, as muscle contraction was present and quickly weakened. Other myotomes in the left lower extremity were 5/5, and all were 5/5 on the right. The patient also underwent a Cox Technic Tolerance test, which indicated that he was able to tolerate flexion distraction with ankle straps.

Diagnostic Imaging

Lumbar spine MRI (Figures 1 and 2) indicated the following:

1. Disc desiccation with moderate L4-L5 and L5-S1 disc height loss with the remaining lumbar disc spaces being preserved.
2. A rudimentary S1-S2 disc space with the soft tissues and T12-L4 were reported as normal
3. An L4-L5 circumferential disc bulge with central disc protrusion with midline annular fissure measuring 3.0 mm in the AP dimension which indents the thecal sac with a residual AP diameter thecal sac measuring 7.7 mm
4. Mild foramina narrowing was noted bilaterally
5. An L5-S1 circumferential disc bulge with left paracentral disc protrusion measuring 9.0 mm, resulting in left lateral recess stenosis and marked displacement of the left S1 nerve root.
6. Moderate foramina stenosis bilaterally from the disc bulge and endplate osteophyte.

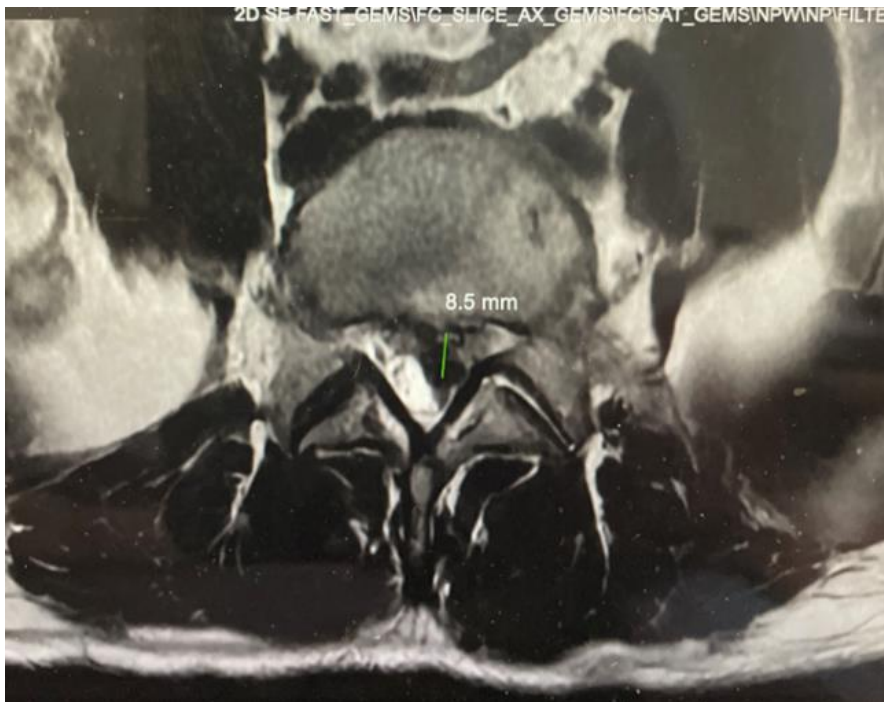


Figure 1. Axial T2 weighted MRI image of the lumbar spine



Figure 2. Sagittal T2 weighted MRI image of the lumbar spine

Assessment

Consistent with the lumbar MRI findings, the patient's symptoms were representative of a lumbar disc disorder with radiculopathy. The MRI demonstrated S1 nerve root displacement, however, the L5 nerve root was also of concern given the loss of sensation and symptoms into the lateral calf. Though the L5-S1 on MRI appeared to be more problematic, the L4-L5 disc protrusion and annular fissure appears to play a greater role in the patient's pain, considering the patient's acute presentation as well as the L5 symptomatology.

Though he did not show improvement with previous conservative measures, conservative care was attempted again because he noted a reduction in LBP, the findings from the end range loading exam were positive, and he tolerated flexion distraction well.

Treatment/Outcomes

The proposed initial management plan included conservative treatment performed 3 times per week for 2 to 3 weeks with the goal of reducing the patient's pain and symptoms. The treatment provided included CTFDD, end-range loading exercises, other home/rehabilitation exercises, soft tissue therapies, and supplements.

The initial treatment included Cox Technic Protocol I: L3 flexion distraction with soft tissue massage in the lumbar, gluteal, posterior aspect of the thigh, and leg regions. Myofascial decompression cupping was applied to the left lumbar erector spinae/quadatus lumborum region. The patient was instructed on performing child's pose and supine knees to chest stretches. The patient was advised to use Ortho Molecular: Soft Tissue Support Packs to help reduce inflammation (Ortho Molecular Products, Barrington, IL, USA). He was instructed on the recommended dose of this supplement, which was 1 pack taken orally 3 times a day for 3 days. After the first visit, the patient stated he felt "a lot better, first time I have felt relief in over 2 months." He was also able to stand upright and bear weight on his left leg without pain.

After 3 treatments in the first week, along with applying kinesio tape to the lumbar spine, he reported feeling better stating he could "get around easier, felt more functional, and could sleep in bed with less pain." He also reported being able to walk further and complete household chores and that his pain was less intense and no longer constant. The kinesio taping was used for its recoil effect which may off-load the muscles and provide stabilization.

During subsequent visits, the patient was instructed on performing extension end-range loading (press-ups), which resulted in a continued reduction of his LBP. At the 4th treatment, the patient reported being able to walk without using a crutch and no longer experiencing pain shooting passed the knee. At that time, CTFDD Protocol II was introduced, and the patient was able to tolerate lateral flexion bilaterally. Prone leg lifts (hip hyperextension) were also introduced for strengthening the gluteal muscles. The patient reported a continued reduction in his low back and leg pain. Although the improvement was moderate, at 3-4/10 on the NRS for pain, he reported being able to work on his truck at home while wearing a back brace, and that he could lift/carry his 2-year-old daughter.

After the 6th treatment, his treatment plan was reduced to once per week. He returned to work and after approximately 1 week he had "some LBP at the end of the workday". After 2 full weeks back at work he reported "only occasionally getting some low back and a little leg pain." He reported being able to manage the pain with rest and/or stretching.

During the 9th treatment, Active Release Techniques were used to release the sciatic nerve in the deep gluteal muscles and bicep femoris. His treatment plan was reduced to twice a month. At this time, the patient continued to report some LBP first thing in the morning and at the end of the workday, but it was manageable at a 1-3/10 on the NRS.

At the last reported visit, the patient reported that he continued to experience pain relief. He reported only experiencing LBP and/or leg pain if he were to "sit for too long, rounded in my back or if I am bent over too long at work." During this visit, ergonomic and lifting techniques were discussed and sit-to-stand/box-squats were introduced.

DISCUSSION

Particular to this case, the patient experienced a lapse in work due to his injury and has accrued costs from multiple treatments. However, with multi-modal conservative

management including CTFDD he was able to return to work and experienced a marked improvement in a relatively short amount of time. Considering the high prevalence of LBP, along with the high costs associated with work-related injuries and healthcare in general, cost-effective interventions that offer high efficacy are vital.² Many treatment options exist for patients with LBP, but it can be difficult for some providers who are not well-versed in LBP management to advise patients on which intervention is most appropriate. Furthermore, interventions such as epidural steroid injections and surgery for LBP have shown a lack of sustained benefit, or are associated with high healthcare costs, along with increased risks of infection.⁹ In addition, some patients respond differently to various types of manual therapy, such as the patient described in this case, in which HVLA spinal manipulation provided little benefit compared to a reduced force spinal manipulation.

This report is among many that show the effectiveness of conservative management, primarily that of CTFDD.¹⁰⁻¹³ This case of a disc protrusion and annular fissure underlines the importance of a thorough intake and diagnostic examination for developing a proper diagnosis and treatment plan. Specifically, in this case, the MRI report indicated that the L5-S1 disc protrusion was the main concern, however, the L4-L5 disc protrusion with annular tear seemed to more closely align with the patient's pain and symptoms.

While accurately diagnosing the patient's condition is important, applying the appropriate evidence-based treatment method based on physical exam findings is also vital for positive outcomes since imaging does not always correlate with clinical subjective and objective findings.

Numerous conservative care treatment approaches are supported by evidence, although not all are suitable for every individual. This underscores the importance of person-centered care. For example, treating acute, sub-acute, and chronic LBP with manual thrusting manipulation is supported by evidence. However, some individuals may not tolerate thrusting manipulation. For those individuals, alternative methods to attain the same therapeutic goals should be considered.^{14,15}

Applying the desired treatment correctly is also important. Specifically, in this case, proper hand placement and the use of CTFDD effectively decompressed the disc and affected nerve root.³ In addition, end-range loading in the appropriate beneficial direction resulted in the centralization of the patient's symptoms.

LIMITATIONS

This case report highlights a single case of an individual benefiting from conservative therapy for a disc protrusion and annular fissure. It is important to point out that this patient's response may not be generalized to the broader population with LBP complaints. In addition, multiple treatment modalities were used, including CTFDD, exercises, myofascial therapies, and supplements. It is difficult to determine if one of these modalities showed benefit over the others, suggesting that a multi-model approach to management might be more effective than a single treatment method. The objective findings of improvement were based on one outcome assessment tool, the Numeric Rating Scale for pain. It is also important to consider that work injury cases can also be complicated by external factors.

CONCLUSION

This case report emphasizes that conservative management is an effective intervention for individuals with disc protrusion and annular fissure. Specifically, this patient reported benefit from conservative treatment with CTFDD, whereas other chiropractic interventions, such as HVLA spinal thrusts, had failed to provide long-term symptomatic relief.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

COMPETING INTERESTS

The authors declare they have no competing interests. Funding for professional editing services was provided by the research fund at Keiser University College of Chiropractic Medicine.

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The Role of a Chiropractor Upon Presentation of Dermatomyositis to a Chiropractic Clinic: A Case Report

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ABSTRACT

Patients often seek chiropractic care for muscle pain and joint aches, but when other symptoms such as skin rashes, weight loss, and weakness present, it is important for the clinician to quickly re-assess and refer the patient to the proper specialist for prompt diagnosis and treatment. It is especially important for the chiropractic clinician to be able to recognize when an inflammatory myopathy presents to their practice. In this case, after a failed chiropractic treatment trial, the patient was referred back to his primary care provider and ultimately was diagnosed with dermatomyositis. He was then able to receive the appropriate treatment for his condition which did include rehabilitative therapy.

INTRODUCTION

Dermatomyositis (DM) is a rare idiopathic myopathy which can be difficult to diagnose due to its varied clinical features. The pathogenesis of this condition is not completely understood, and it is thought that there are several genetic, environmental, and immune factors that play a role. This condition has cutaneous, muscular, and systemic manifestations.¹ DM can be differentiated from variable idiopathic inflammatory myopathies by which muscle groups are affected and by histopathological findings. DM specifically presents with symmetric proximal skeletal muscle weakness. Muscle biopsy typically shows perivascular and perimysial inflammatory infiltrate, perifascicular atrophy, and microangiopathy. Skin biopsy findings include vacuolar changes of the basal layer,

increased lymphocytic infiltrate, and increased mucin deposition in the dermis. It can affect other systems to include the pulmonary, cardiovascular, and gastrointestinal systems.² The incidence of DM is approximately 9.63 per 1,000,000, according to a retrospective population-based study performed between 1967 and 2007 in Olmsted County, Minnesota.³ In a nationwide population study in Taiwan which examined records from 2003 through 2007, it was found that the mean age at diagnosis was 44 with a female predominance.⁴

Muscle pain and weakness are common reasons for patients to seek chiropractic care. Non-specific back pain of muscular origin, for example, is estimated to affect 60 to 85% of the population at some point in a person's lifetime.⁵ It is important for the astute clinician to carefully consider differential diagnoses for presentations which are not completely characteristic of a mechanical pain source, and to be aware of how to recognize less common and more serious conditions that necessitate immediate referral, especially as they evolve. Various idiopathic myopathies are examples of conditions that may present to a chiropractic office, and the purpose of this case study is to review the presentation of a patient who presented to a chiropractor with hip pain and weakness, and was ultimately diagnosed with DM.

CASE REPORT

An 87-year-old male veteran presented to his primary care provider (PCP) at a Veterans Affairs (VA) Health System clinic with chief complaint of low back pain and bilateral hip pain, 6 days after initial onset. He explained on the day of initial onset, he played golf and then went to have drinks at a bar. When he went to get off his barstool, he immediately experienced transient pain at the right lateral hip and groin. One to two days later, he began experiencing the same quality pain in the left lateral hip and groin. Upon exam, he was found to have right inguinal pain with extension of the right hip. All other ranges of motion of the right and left hip were full and without pain. He reported mild tenderness to palpation over the right greater trochanter. His PCP ordered lumbar and hip radiographs as well as a lumbar MRI, provided an analgesic gel, advised him to stop walking and playing golf, and prescribed piriformis stretches. When he presented back to his PCP two weeks after onset of pain, he complained of a rash located on his scalp, neck, arms, and back (**Figures 1-2**). Although he felt the rash had been present over the past 6 months, the pain and irritation from it had worsened over that past week. He denied any use of new clothing, foods, medications, laundry soaps, lotions, or contact with anything out in the yard. He also reported worsening of his hip pain. It was noted he had an erythematous rash with excoriations on his back, scalp, neck, and a slight rash on both upper extremities. He was subsequently given Aquaphor cream and oral prednisone (prednisone was for both the rash and the hip pain) by his PCP. The next day he underwent lumbar and hip radiographs, which found degenerative changes only. The lumbar MRI without contrast revealed a mild disc bulge and facet hypertrophy with small bilateral facet joint effusions at L4-L5. There were mild facet joint arthritic changes at L5-S1. The PCP referred the patient concurrently to dermatology for suspected drug reactions, chiropractic/acupuncture for mechanical hip pain, and neurosurgery for back pain and lower extremity weakness (**Table 1**).



Figure 1



Figure 2

The patient had an appointment with neurosurgery 4 weeks after the onset of symptoms and 1 week before his chiropractic consult. Neurosurgery determined surgery was not indicated. Physical therapy, pain medications, and referral to pain clinic were recommended, although not pursued. At his chiropractic consultation, he described the pain as above and stated that the pain had prevented him from going on daily walks and golfing. His wife, who was in attendance, explained he was normally extremely active. The patient perceived that due to immobility, he was experiencing increased aching and new onset of weakness in the legs and arms. He reported only experiencing pain with hip movement and denied pain at rest. The patient provided a verbal pain score of 7/10 with movement and qualified the pain as “throbbing.” The only known palliative measure was ice. The patient denied temporal factors, bowel/bladder dysfunction or incontinence, and saddle anesthesia. On review of systems, he had comorbidities of chronic obstructive pulmonary disease, diabetes mellitus type 2, squamous cell carcinoma, coronary artery disease, history of cholecystectomy, history of prostate cancer of unknown grade and status post radical prostatectomy, renal failure, atrial fibrillation, hypertension, and mixed hyperlipidemia. On examination, his lumbar range of motion was within normal limits and without pain. Active range of motion of the hips showed significant difficulty and partial inability to move his hips into flexion, abduction/internal rotation, and abduction/external rotation. Passive range of motion was full without pain provocation. Orthopedic examination of the lumbar spine was unremarkable. FABER test (flexion, abduction, and external rotation of the hip) was positive bilaterally for ipsilateral hip pain. He was neurologically intact with equal and symmetrical deep tendon reflexes, adequate muscle strength, and intact sensation to light touch in the bilateral lower extremities. He had a non-tender lumbar spine and hypertonicity/tenderness was noted only at the bilateral gluteus medii. A large red rash was observed across the entire lumbar spine and all extremities, but it was noted the patient would be following up with his private dermatologist and VA dermatologist for further evaluation.

The patient was recommended a trial of chiropractic care with the addition of acupuncture because he reported great success with acupuncture in the past. Although diabetes mellitus (DMII) is a relative contraindication for acupuncture, the patient’s DMII was stable without evidence of peripheral neuropathy or poor wound healing on physical exam. He underwent 8 chiropractic visits and 7 acupuncture treatments within 4 weeks. Chiropractic treatment consisted of manual soft tissue therapy to the bilateral gluteal muscles on the first visit and drop table technique to the pelvis. Every subsequent visit included drop table to the pelvis and acupuncture treatment. Needles were placed in Ashi (tender) points over the bilateral femoroacetabular joints and sacroiliac regions (not where rash was present). During the first 6 treatments, the patient noted decreased pain and improved function in that he could walk and flex his hips more easily. On visit 7 though, the patient returned stating he felt a decline in his function again, noting he could not flex his hips to take off his pants at night. On visit 8, the patient’s bilateral hip pain was fully relieved, and he rated the pain 0/10 but his function drastically declined, as he presented that day in a wheelchair because he did not think he could ambulate from the parking lot into the clinic. The patient was discharged and promptly referred back to his PCP due to suspicion of a non-mechanical source for his condition.

3 weeks after onset of pain, the patient underwent evaluation with two dermatologists (one

at VA and one in the private sector). At the VA dermatology clinic, examination was remarkable for scattered erythematous and some eczematous appearing patches, some scaly, some crusty on the back, scalp, and neck. Shave biopsy was performed, and the findings were consistent with interface dermatitis. This pattern is consistent with an inflammatory reaction, often seen in drug eruptions. He was diagnosed with a reaction to doxycycline, earlier prescribed to him for rosacea. The patient reported their non-VA dermatologist said he likely had a reaction to hydrochlorothiazide after two punch biopsies were assessed. His medications were altered but his rash continued to worsen.

At one month follow up with VA dermatology (10 weeks after onset), the patient's symptoms had not changed. The dermatologist then suspected dermatomyositis, and a shave biopsy was repeated for the rash on the right arm. Labs were ordered and indicated a creatine kinase (CK) level within normal range, although this was after he underwent treatment with 3 rounds of oral corticosteroid prescription.⁶ It is unknown if the lab draw overlapped with the steroid medication use. The biopsy returned 2 weeks later with results indicating connective tissue disease that appeared consistent with dermatomyositis. He was subsequently referred to rheumatology for confirmation and management of dermatomyositis. The patient was prescribed 20mg prednisone twice daily, and azathioprine 50mg once daily. At 6 weeks follow up with rheumatology, his symptoms had improved, and he began physical therapy to address acquired extremity weakness.

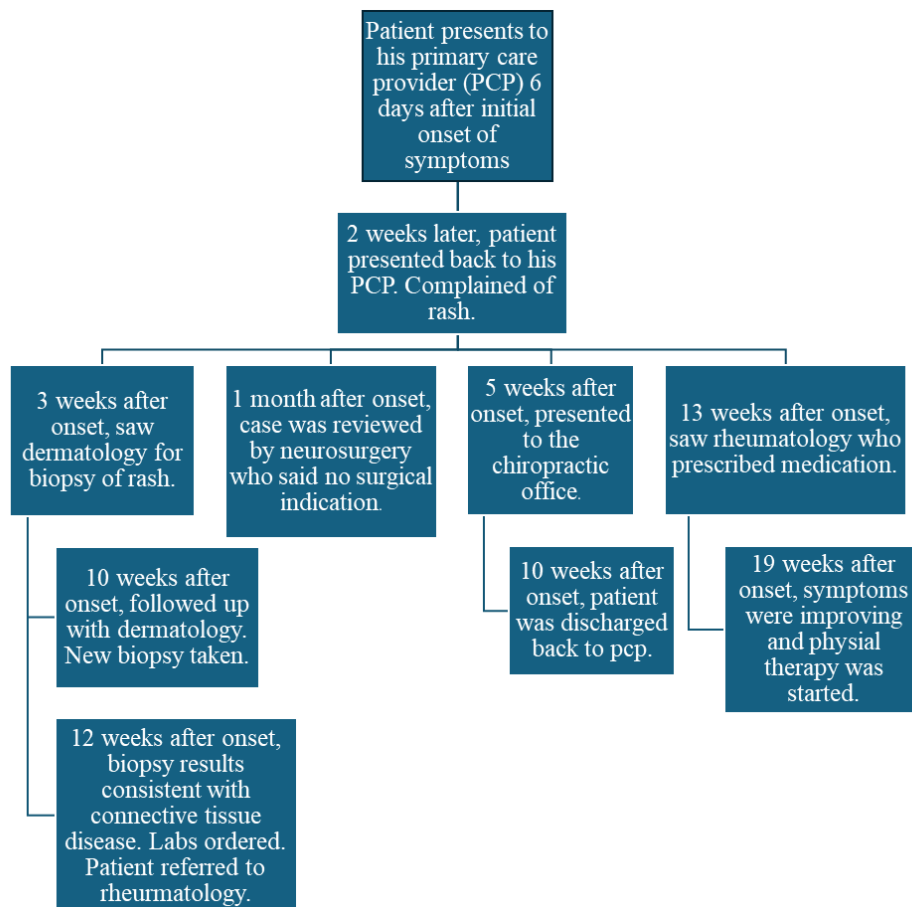


Table 1 – Timeline of referrals and progress

DISCUSSION

Idiopathic inflammatory myopathies (IIM), including dermatomyositis, are considered to be a rare group of autoimmune disorders that mostly affect skeletal muscle, however other systems can also be affected. The primary clinical feature of myositis is noted by progressive and symmetrical muscular weakness in the proximal upper and/or lower extremities. In the case of dermatomyositis, there are additional clinical symptoms including skin involvement. It is unclear what causes the damage to the skeletal musculature; however, it is important to consider there are multiple immunopathogenic pathways in inflammatory myopathies. Of the IIM, dermatomyositis is more common, and can cause skin rash, muscle weakness, and is typically associated with elevated CK.⁷ The pathophysiology of dermatomyositis includes perivascular inflammatory infiltrates in the interfascicular septae to include B cells, macrophages, dendritic cells, and CD4 T cells – all class II major histocompatibility (MHC) molecules and indicative of a significant immunogenic response. DM is also associated with five autoantibodies (anti-TIF1- γ , anti-MDA-5, anti-SAE-1, anti-Mi-2, and anti-NXP-2) which can vary in proportion depending on the patient's country of origin, and result in different symptomatic expression.⁸

DM tends to become more prevalent as the patient ages and is more common in the female population (20 vs 3.7 per 100,000 person-years).⁷ Patients with DM typically exhibit dermatological symptoms either preceding or simultaneously with muscular weakness. In the case of this patient, he had reported a rash which had been present for 6 months prior to the onset of his weakness. This case is also interesting because the patient reported an inciting event to muscular pain, causing him to be referred initially to the chiropractic clinic. Upon examination, mechanical pain was elicited and was then treated to resolution, however the patient was referred back to his PCP due to progressive weakness. It is important to evaluate response to care throughout the care trial, and to consider other symptoms outside of the musculoskeletal system. Prompt care by the appropriate specialty was warranted and ultimately resulted in the appropriate management of the patient's condition.

CONCLUSION

The chiropractic clinician plays an integral role in the evaluation and management of acute, subacute, and chronic musculoskeletal conditions. As such, a vital part of the chiropractic clinician's duty is to recognize the signs and symptoms of musculoskeletal complaints with non-mechanical origin. The clinician must be watchful for progression of a condition and re-evaluate to come to a change in plan when warranted. It is imperative that when such conditions are suspected, the appropriate medical team members are consulted to provide holistic care to the patient. In this case, a patient presented to the clinic with bilateral hip pain but during the course of care, his condition evolved. The underlying diagnosis of dermatomyositis – a rheumatological disorder – could not be appropriately managed solely with manual therapies. One of the sequelae of this disease is muscular weakness, but the underlying inflammatory etiology needed to be addressed prior to including complementary therapies to address his pain and weakness. The chiropractic clinician's training equips them to evaluate conditions of varying etiology, and given the unique privilege of multiple patient encounters within a short period of time, the chiropractic clinician can closely examine and monitor new or progressive symptoms and report them to the appropriate providers. This

effectively makes the chiropractor an essential part of the patient's care team, working in complement with the primary care providers to ensure the patient receives the most appropriate care and to prevent chronic pain conditions that may result in poor quality of life and function.

Once appropriate medical management is implemented, it is crucial for the patient to engage in exercise, along with physical and occupational therapies.⁹ The literature demonstrates exercise is both safe and beneficial for patients with IIM. As a benefit, patients can begin to experience improved muscle strength and aerobic capacity. In a randomized controlled trial that evaluated the effect of aerobic exercise with patients who had a diagnosis of DM and polymyositis (PM), there was demonstrated increased isometric peak force, enhanced exercise tolerance, and improved anaerobic threshold intensity, however no change in muscle enzyme levels. Resistance exercises were also found to be safe early on in treatment. In patients with chronic DM and PM, there was demonstrated enhanced muscle function without any evidence of adverse events. As strength improves and CK normalizes, a more comprehensive exercise regimen can be implemented.¹⁰

While the traditional role of the chiropractor is considered to be a spinal manipulative therapy provider, the chiropractor's role in patient care for musculoskeletal conditions is more extensive and includes the ability to educate patients through progressive exercise programs.¹¹ In a study specifically evaluating the descriptive data of chiropractic care in North America (current location of both authors) over the last decade, manipulative therapy was identified as the most common therapy. When evaluating the other non-adjustive therapies, patient education and exercise were the most widely utilized amongst the providers.¹² These studies demonstrate an additional role chiropractors may play in managing patients with musculoskeletal conditions. With regard to this specific patient, he was referred to an outside physical therapist to begin his exercise regimen.

LIMITATIONS

This is a single patient case report, and the results may not be generalizable to other individuals presenting with similar conditions.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

DISCLAIMER

Contents do not represent the views of the U.S. Department of Veterans Affairs or the United States Government.

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