Juvenile Dermatomyositis and Pilates

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ABSTRACT

Juvenile dermatomyositis is an inflammatory disease of the muscle (myositis), skin and blood vessels that affects about 3 in 1 million children each year. The cause is unknown. The symptoms of JDM include muscle weakness and skin rash. Due to the disease process it causes decreased muscle strength and endurance, decreased active range of movement, decreased cardiovascular endurance along with deconditioning from being hospitalized and benefits from intensive physical therapy Pilates managed program. This paper discusses exercise recommendation for patients/clients with Juvenile Dermatomyositis, covering such considerations as the level of the disease, appropriate exercises, cardiovascular recommendations and contraindications. It concludes with a case study of Juvenile Dermatomyositis patient and the Pilates program designed for her.
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This is an image of an individual with Juvenile Dermatomyositis. This photo is to demonstrate a child’s posture when affected by the disease process of weak musculature. The child will present with an anterior pelvic tilt and hyperlordosis due to weak abdominals and gluts along with thoracic kyphosis contributing to poor position of scapulas bilaterally which will be abducted and upwardly rotated and tilted anteriorly due to poor strength of scapular stabilizers which includes the serratus anterior along with rhomboids and lower/middle trapezius. Child also has tight erector spinae muscles along with pectoralis.
Overview of Juvenile Dermatomyositis:

Juvenile dermatomyositis (JDM) belongs to a group of diseases called autoimmune diseases. In autoimmune diseases an abnormal reaction of the immune system causes an inflammation in body tissues when no infection is present. In dermatomyositis, the inflammation is in very small blood vessels in muscle (myositis) and skin (dermatitis). This leads to characteristic symptoms, such as muscle weakness, or pain, mainly in the muscles surrounding the hip and shoulder girdle, and skin eruptions in the face, above the eyelids, on the knuckles, knees and elbows. The disease can be present in children and in adults. If the symptoms of dermatomyositis present before the age of 16 years, the disease is addressed as the juvenile form.

Patients with JDM develop weakness in the large muscles around the neck, shoulders and hips. This causes difficulty in climbing stairs, getting into cars, getting up from a chair or off the floor, or brushing hair. Most patients have little, if any, pain in their muscles, which distinguishes them from patients with other forms of muscle disease. Many patients with other conditions complain of weakness; however, when questioned closely, they really mean that they are tired, short of breath or depressed rather than suffering from true muscle weakness.

JDM is a rare disease in children. The incidence of JDM is estimated to be around four in 100,000 children. Girls are affected twice as often as boys. Onset is most common between the ages of four and 10 years. There is very little evidence for any geographically or racially linked predisposition to JDM. Dermatomyositis is also seen in adults, but the presentation and
course of the disease differs from the juvenile form of dermatomyositis. Unlike in adults, there is no association with the development of malignancy.

As in most autoimmune diseases, the exact cause of dermatomyositis is not yet known. The origin of the disease is probably multifactorial, which means that a combination of genetic and environmental factors leads to an increased susceptibility to dermatomyositis. JDM, therefore, is not an inherited disease. At most, there is an increased frequency of autoimmune disease in families of children with JDM.

As for the environmental factors associated with the development of JDM, a lot of investigations have been performed. It is hypothesized that microorganisms might trigger an abnormal response within the immune system in autoimmune diseases.

If the disease is controllable, the overall prognosis of JDM is favorable. In contrast to adults with DM, JDM is not associated with the occurrence of a malignancy. However, there is a mortality risk in those rare cases where respiratory, cardiac, neurological, or gastrointestinal complications develop during the acute phase of the disease. Functional outcome is largely determined by the development and extent of calcium deposits (called calcinosis) and the severity of muscle involvement, which can lead to muscle atrophy and contracture. Calcinosis is said to occur in 10 to 30% of all JDM children. There is no proven therapy for calcinosis.

The course of the disease can be divided into several subtypes. JDM, with a monocylic course, is defined as just one episode of disease that is in remission within two years of onset,
without relapses. This form has the most favorable prognosis. JDM, with a chronic polycyclic course, is characterized by prolonged remission with one or more relapses after stopping treatment. Chronic, active disease is characterized by a chronically persistent disease activity despite treatment (chronic remittent disease course). This last group has a higher risk of complications.
Case Study:

Tamia Smith is an 11 year old female who was diagnosed with Dermatomyositis. She was hospitalized for medical treatment and physical therapy acutely for 2 weeks. Then was in an inpatient rehab stay for 3 weeks and then participated in outpatient physical therapy 3 days a week for 6 months. Once discharged from Physical therapy, Tamia presents with weak abdominals (rectus, external and internal obliques and transverse) and multifidus along with scapular stabilizers which was noted in her poor posture (anterior pelvic tilt). Tamia’s posture which included the following: hyperlordosis with anterior pelvic tilt due to weak abdominals and gluteals but tight rectus and iliopsoas along with tight erector spinae, increase kyphosis in her thoracic spine along with cervical flexion and capital extension. Tamia had tight pectoralis muscles and weak rhomboids and middle and lower trapezius all contributing to poor position of her scapulas which are abducted, upwardly rotated but anteriorly tilted positioning the humerus internally rotated. Tamia’s pelvis position and weak musculature and tight hips all contributing to her externally rotated hips along with wide base of support with collapse feiss line-poor intrinsic muscles to support foot.
The Block System:

1. Roll Down: Used to access Tamia’s Movement
2. Pelvic Curl- Warm up: Neutral spine and engagement of transverse abs along with lateral breathing.
3. Spine Twist- Warm up: Neutral spine maintained by the engagement of transverse abs with dynamic movement.
4. Chest Lift- Warm up: Neutral spine maintained by the engagement of transverse abs with dynamic movement.
6. Parallel Heels on Reformer- Foot Work
7. Parallel Toes on Reformer- Foot Work
8. Small V-Position Toes Reformer- Foot Work
9. Open V-Position Heels Reformer- Foot Work
10. Open V-Position Toes Reformer- Foot Work
11. Calf Raises Reformer- Foot Work
12. Prances on Reformer- Foot Work
13. Single Leg Heel Reformer- Foot Work
14. Single Leg Toes Reformer- Foot Work
15. Hundred Prep Reformer- Abdominal Work
16. Round Back (Short Box Series) Reformer- Abdominal Work
17. Flat Back (Short Box Series) Reformer- Abdominal Work
18. Tilt (Short Box Series) Reformer- Abdominal Work
19. Twist (Short Box Series) Reformer- Abdominal Work
20. Round About (Short Box Series) Reformer- Abdominal Work
21. Climb-A-Tree (Short Box Series) Reformer- Abdominal Work
22. Down Circles Reformer- Hip Work
24. Openings Reformer- Hip Work
25. Frog Reformer- Hip Work
26. Extended Frog Reformer- Hip Work
27. Extended Frog Reverse Reformer- Hip Work
28. Bottom lift Reformer- Spinal articulation
29. Standing Lunge Reformer (Hamstring Stretch Series)
30. Scooter- Full Body Integration
31. Extension supine reformer- Arm Work
32. Adduction supine reformer- Arm Work
33. Circles (up and down) supine reformer- Arm Work
34. Triceps supine reformer- Arm Work
35. Mermaid- Lateral flexion/rotation
36. Pulling Straps 1(Long Box Series)- Back Extension
37. Pulling Straps 2(Long Box Series)- Back Extension
38. Roll Down
Conclusion:

Tamia’s exercise Pilates regime has helped her to improve her posture. She has improved her muscle strength and endurance along with cardiovascular endurance along with balance and coordination. She has improved her motor learning which has improve her motor control and planning which have improved her biomechanics in posture with have promoted independence with functional mobility in daily living. Overall the exercise program has promoted her active range of motion especially with regard to her transverse abdominals along with her upper extremity/shoulder and the scapula humeral rhythm. Overall the integration of Pilates into Tamia’s rehab program have promoted her independence with her functional mobility which has also promoted her confidence.
References

3. http://www.printo.it/