

Headache in pediatric and adolescent patients with Duchenne and Becker muscular dystrophies - An observational study

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Background: Duchenne and Becker muscular dystrophies are inherited X-linked disorders that appear in childhood and can lead to significant disability. Recent studies have showed that chronic pain is a significant problem for the affected patients, but no study has evaluated the prevalence and features of headache among patients with those diseases.

Methods: Children and adolescent aged 2.5-18 years with an established diagnosis of muscular dystrophy who visited the multi-disciplinary neuromuscular pediatric clinic were enrolled. The patients and their parents received a questionnaire regarding the existence of headache and its features and regarding emotional and social factors.

Results: The cohort included 68 patients, all males. Mean age was 9.0 ± 3.8 years. Forty-eight patients (70.6%) had Duchenne muscular dystrophy and the others had Becker muscular dystrophy. Overall, 22 (32.4%) patients reported headaches, among them, 10 (45.5%) had a diagnosis of migraine. Patients with headache were older than those without headache ($p < 0.001$), their blood creatine kinase level was significantly lower ($p = 0.0142$), and they had a significantly higher proportion of other pain ($p = 0.0086$). Their SDQ emotional scale score was significantly higher than those without headache ($p = 0.0004$).

Conclusions: The prevalence of headache among patients with muscular dystrophy is high. It is related to the severity of the disease, to other location of pain and to emotional difficulties. Physicians who take care of those children and adolescent may consider to actively screen for headache and to offer appropriate, inclusive treatment.

| Parameter | Patients without headache (N=46) | Patients with headache (N=22) | p value |
|----------------------------------|-------------------------------------|----------------------------------|---------|
| Age (years) | 7.85 ± 3.21 | 11.4 ± 3.86 | 0.0001 |
| Muscle disease onset (years) | 2.88 ± 1.896 | 2.79 ± 2.36 | 0.8798 |
| Age at diagnosis (years) | 3.30 ± 2.08 | 3.33 ± 2.38 | 0.9696 |
| Obesity- no (%) | 18 (40%) | 13 (59.1%) | 0.193 |
| Creatine Kinase (CK) | 11219 ± 6600 | 6916 ± 6314 | 0.0142 |
| Any medication use no (%) | 27 (58.7%) | 14 (63.6%) | 0.7940 |
| Parental history of headaches | 13 (28.9%) | 13 (59.1%) | 0.031 |
| Any other pain no (%) | 7 (23.3%) | 13 (61.9%) | 0.0086 |
| SDQ Emotional scale | 3.2 ± 2.16 | 5.36 ± 2.36 | 0.0004 |

Recent Publications

1. Mah JK, Korngut L, Dykeman J, Day L, Pringsheim T, Jette N. A systematic review and meta-analysis on the epidemiology of Duchenne and Becker muscular dystrophy. *Neuromuscul Disord.* 2014;24(6):482-491.
2. Silva TD, Massetti T, Monteiro CB, Trevizan IL, Arab C, Caromano FA, Voos MC, Oliveira AS, Favero FM. Pain characterization in Duchenne muscular dystrophy. *Arq Neuropsiquiatr.* 2016 Sep;74(9):767-774.
3. Engel JM, Kartin D, Carter GT, Jensen MP, Jaffe KM. Pain in youths with neuromuscular disease. *Am J Hosp Palliat Care.* 2009 Oct-Nov;26(5):405-12.LiX.
4. Pangalila RF, van den Bos GA, Bartels B, Bergen M, Stam HJ, Roebroek ME. Prevalence of fatigue, pain, and affective disorders in adults with duchenne muscular dystrophy and their associations with quality of life. *Arch Phys Med Rehabil.* 2015 Jul;96(7):1242-7.
5. Bray P, Bundy AC, Ryan MM, North KN, Burns J. Health status of boys with Duchenne muscular dystrophy: a parent's perspective. *J Paediatr Child Health.* 2011 Aug;47(8):557-62.

Biography

Tal Eidlitz-Markus is a leading expert in the field of Pediatric Headache. She is the head of the Pediatric Headache Clinic in Shneider Children's Medical Center of Israel, one of the largest tertiary headache clinics in Israel. During the last decades she has published many studies who dealt with the Pathophysiology of Headache and the clinical aspect of migraine, post-traumatic headache and other headache types and features among children. She is a member of the International Headache Society and a regular participant in international congress in the field of Neurology and Headache.