DUCHENNE MUSCULAR DYSTROPHY (DMD): THE IMPORTANCE OF A GENETIC DIAGNOSIS

A PROMPT REFERRAL FOR DIAGNOSIS IS VITAL TO GIVE YOUR PATIENTS THE BEST CHANCE OF BETTER CLINICAL OUTCOMES[1,2]

A genetic diagnosis is required to confirm DMD and to identify the specific mutation causing the disease.[1]

BENEFITS OF GENETIC DIAGNOSIS

- Genetic testing can confirm DMD[1,3]
- Genetic testing is the only method for determining a patient's specific mutation type[1,3]
- A specific genetic diagnosis may help identify medical management options and potential to enrol into clinical trials[1,3]

PATIENT WITH ELEVATED CREATINE KINASE LEVELS (>250 U/L)*

TEST FOR *DMD* GENE DELETION OR DUPLICATION USING MLPA OR CGH	✓ **MUTATION FOUND:**† DMD DIAGNOSIS	~70-80% of DMD patients
✗ **NO MUTATION FOUND:** PERFORM SANGER OR NGS TO TEST FOR SMALL SCALE MUTATIONS IN THE *DMD* GENE	✓ **MUTATION FOUND:**† DMD DIAGNOSIS	~20-30% of DMD patients
✗ **NO MUTATION FOUND:** PERFORM MUSCLE BIOPSY	✓ **DYSTROPHIN ABSENT:** DMD DIAGNOSIS; TEST FOR DEEP INTRONIC MUTATIONS IN *DMD* GENE WITH mRNA ANALYSIS	~0.3% of DMD patients have a deep intronic mutation
✗ **DYSTROPHIN PRESENT:** DMD UNLIKELY; CONSIDER ALTERNATIVE DIAGNOSES		

Adapted from references 1,4 and 5.

Confirm their DMD diagnosis with genetic testing and get them on the right treatment and management pathway[1,3]

CGH, comparative genome hybridisation; MLPA, multiplex ligation-dependent probe amplification; NGS, next-generation sequencing. *The normal CK range is generally up to 250 U/L. Absolute values may differ between laboratories.[5] †Reading frame rule: in general, out-of-frame mutations confirm DMD and in-frame mutations confirm Becker muscular dystrophy (BMD), a less severe form of the disease. ~4-9% of DMD gene mutations do not follow the reading frame rule.[4]

References: 1. Birnkrant DJ, *et al. Lancet Neurol.* 2018;17:251–267. **2.** van Ruiten HJ, *et al. Arch Dis Child.* 2014;99:1074–107. **3.** Aartsma-Rus A, *et al. J Med Genet.* 2016;53:145–151. **4.** Aartsma-Rus A, *et al. J Pediatr.* 2019;204:305–313. **5.** National Task Force for Early Identification of Childhood Neuromuscular Disorders. Child Muscle Weakness. 2019. Available at: childmuscleweakness.org [Accessed July 2020].

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