Duchenne Muscular Dystrophy: Comprehensive Care

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Duchenne Muscular Dystrophy: Care

"Are we there yet?"

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Overview: “What we know and don’t know about Duchenne”

- “Forward looking statement” – changing target with evolving natural history modified by improved outcomes, new therapeutics- hence a new generation of DMD patients with different and new care needs

- Comprehensive Care
- Glucocorticoid therapy
- Cardiac – “prophylactic meds”, assistive devices, ICD
- Bone health – meds for osteoporosis
- Orthopedics – treatment of scoliosis in the older patient; fracture management
- Endocrine – Insulin resistance, metabolic syndrome
- Nutrition and supplements
- PT
- Neurocognitive care needs
DMD – the disease

Skeletal muscles
- Neuromuscular/PT/Rehab/Ortho

Respiratory muscles
- Pulmonary

Cardiac muscles
- Cardiology

Smooth muscles
- GI/GU specialists

Brain dystrophin
- Neurodevelopmental/behavioral

The patient with DMD

Motor function/dysfunction:
- strength
- load (weight/BMI)
- alignment

Growth, development and nutrition
- Height, weight, BMI
- Bone health
- Puberty

Endocrine function – at risk for adrenal insufficiency (steroids)

Cardio-pulmonary function

GI/GU function
- constipation
- urinary problems
- kidney stones

DMD and psychosocial function
- home, school, work

DMD and family: genetic counseling
- Moms and extended family
DMD: 5 Cs of Comprehensive Patient and Family Centered Care

• Care team – team based
• Care coordination
• Collaborative care
• Communication
• Continuity of care over the care cycle
Glucocorticoids for DMD

- Glucocorticoids: evidence based standard of care for treatment of DMD
  - Drachman et al, Lancet 1974 – open label prednisone in 14 patients; ages 3-10, 1-28 months treatment
  - Brooke et al, Arch Neurol 1987 – RDBPC trials
DMD: Glucocorticoid (GC) therapy

• Standard of care
• When to start
• Type of GC – prednisone, deflazacort
• Dosing schedule
Prednisone/prednisolone and deflazacort regimens in the CINRG Duchenne Natural History Study.

*Bello et al. Neurology 2015; 85: 1048-55*

(A) Participants treated at least 1 year while ambulatory (n = 252, black line) vs participants treated less or untreated (n = 88, red line). (B) Participants treated with the most common drug-regimen combinations: daily PRED (n = 94, black line), high-dose 2 days/week PRED (n = 19, red line), low-dose intermittent PRED (n = 14, yellow line), and daily deflazacort (n = 80, green line). PRED 5 prednisone or prednisolone.
Management of Cardiac Involvement Associated with Neuromuscular Disease – AHA Scientific Statement 2017

• Proactive approach to screening, diagnosis and management of CV complications
• Collaboration between NM specialist and cardiologist
• Cardiac evaluation 3-6 months before anesthesia/sedation
• For patients with increased cardiac risk during major surgeries, need cardiac monitoring by “cardiac” anesthesiologist and for procedures to be done at centers with intensive care facilities
Medication Therapy

ACEIs and Angiotensin Receptor Blockers:
• The use of an ACEI or ARB in the setting of a reduced EF is recommended for all NMDs (Class I; Level of Evidence B).
• 2. The use of an ACEI or ARB before onset of a reduced EF in boys with DMD age ≥10 years may be considered (Class IIb; Level of Evidence B).

β-adrenergic Blockers:
• Given the balance of human data regarding the use of β-adrenergic blockade in DMD/BMD and, to a lesser extent, other neuromuscular disorders, the use of β-adrenergic blockade in the setting of any NMD with a reduced EF is recommended (Class I; Level of Evidence B). 2. Without other indication (eg, arrhythmia), the use of β-adrenergic blockade in the absence of reduced EF as therapy to delay or prevent onset of dilated cardiomyopathy is currently not recommended (Class III; Level of Evidence C).

Mineralocorticoid antagonists:
• Given the evidence of benefit in adults with symptomatic LV systolic dysfunction, it is reasonable to consider the use of an aldosterone antagonist in DMD/BMD with systolic dysfunction (Class IIa; Level of Evidence C). 2. Use of an aldosterone antagonist in DMD/BMD and with preserved LV systolic function, particularly in those who have evidence of myocardial fibrosis (eg, LGE on CMR), may be considered (Class IIb; Level of Evidence C).
Bone health

- Calcium intake
- Vitamin D 3
- ? Vitamin K2
- Oral vs IV bisphosphonates

Ward et al 2012
Orthopedics

- Scoliosis: older patients in 20s;
- Criteria for surgical treatment
- Femoral Fracture management: long leg cast
  With knee flexed - contraindicated for DMD patients

Dubowitz V, NMD 2010; 20:282
Endocrine: Excessive weight gain on daily deflazacort

- Insulin resistance
- Metabolic syndrome
- Nutrition
Physical Therapy

• Range of motion
• Role of stretching
Neurocognitive care needs

• Neurodevelopmental problems – Intellectual disabilities, ADD, learning difficulties, ASD

• Neuropsychiatric – mood disorders, emotional and behavioral dysregulation, OC behaviors, anxiety, depression

• Need to collaborate with psychiatry – meds with side effects of insulin resistance and weight gain
Questions?