Managing FSHD

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Outline

• Diagnosis
• Clinical features
• Associated testing
• Treatment
Diagnosis of FSHD1

• Autosomal dominant condition
• Prevalence of 1:20,000
• Stable repeat length between generations

Flanigan, et al., 2001
How do you diagnose FSHD?

- Family members with clinical features
- Blood test for D4Z4 contraction
- SMCHD1 gene test
- Methylation assay

Wagner K, 2020
How important is the repeat length in FSHD1?

- Likely predictive of a more severe phenotype (1-3 repeat units)
- Over 4 is less predictive
- May be affected by modifiers in methylation genes

Goselink, et al., 2019
FSHD1 or 2: What is the difference?

• Genetically distinct
• Clinically no identified difference

Sacconi, et al., 2019
Phenotype

- Asymmetric, regional, and step-wise
- Face
- Scapular muscles
- Humeral muscles
- Eventually
  - Peroneal
  - Quadriceps
  - Abdominal muscles
Predominantly a skeletal muscle disease

• Cross sectional survey of 328 participants with FSHD

<table>
<thead>
<tr>
<th>Symptomatic themes</th>
<th>Population impact score*</th>
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</thead>
<tbody>
<tr>
<td>Problems with shoulders or arms</td>
<td>2.59</td>
</tr>
<tr>
<td>Limitations with mobility or walking</td>
<td>2.49</td>
</tr>
<tr>
<td>Inability to do activities</td>
<td>2.36</td>
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<tr>
<td>Back, chest, or abdomen weakness</td>
<td>2.22</td>
</tr>
<tr>
<td>Changed body image due to disease</td>
<td>2.04</td>
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<tr>
<td>Fatigue</td>
<td>2.00</td>
</tr>
<tr>
<td>Pain</td>
<td>1.57</td>
</tr>
<tr>
<td>Problems with physical health</td>
<td>1.47</td>
</tr>
<tr>
<td>Decreased performance in social situations</td>
<td>1.29</td>
</tr>
<tr>
<td>Problems with hands or fingers</td>
<td>1.14</td>
</tr>
<tr>
<td>Decreased satisfaction in social situation</td>
<td>1.11</td>
</tr>
<tr>
<td>Emotional issues</td>
<td>0.97</td>
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<tr>
<td>Problems eating</td>
<td>0.48</td>
</tr>
<tr>
<td>Difficulty thinking</td>
<td>0.36</td>
</tr>
<tr>
<td>Communication difficulties</td>
<td>0.33</td>
</tr>
</tbody>
</table>

*Percentage of participants in whom an issue was experienced multiplied by the average life impact score of the issue.
Other complications

• Pain
• Hearing loss
• Less common:
  • Coat’s disease
  • Respiratory failure
Natural History of FSHD

• Slowly progressive
• Often periods of progression and plateaus
Associated Testing

- Muscle MRI
- Muscle biopsy
Treatment

- Assistive devices
  - AFOs
  - Canes
  - Wheelchairs

Hilbert, et al., 2012
Exercise and FSHD

• Aerobic exercise has been shown to:
  • Improve endurance
  • Reduce fatigue
• Caution advised with weight bearing exercises

Aerobic training improves exercise performance in facioscapulohumeral muscular dystrophy.
Olsen, David; Orngreen, Mette; Vissing, John; MD, PhD

DOI: 10.1212/01.WNL.0000150584.45055.27
Scapular fixation

- Minority of patients benefit
- May improve shoulder range of motion in appropriate patients
- Can assess benefit with manual fixation

https://fsh-group.org/?page_id=273
Medications

• No current therapy has shown benefit
• Studies have denied benefit of:
  • Albuterol
  • Corticosteroids
  • Myostatin inhibitors
• No studies support supplement use
• Treatment of pain with standard therapies, avoid opioids
Annual monitoring

• Pulmonary function at baseline and with symptoms
• Retinal monitoring in appropriate patients
• Pain screen
• Hearing screen
Summary

• Diagnosis by blood test and family history
• Repeat length may predict severity
• Aerobic exercise may be beneficial
• Current medications are not disease modifying