Body composition of adults with mitochondrial disease

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Introduction

Recently, it was shown that, based on body mass index (BMI), malnutrition frequently occurs in Mitochondrial Disease (MD) patients. The aim of this study was describing body composition (BC) in adults with MD compared to healthy references.

Methods

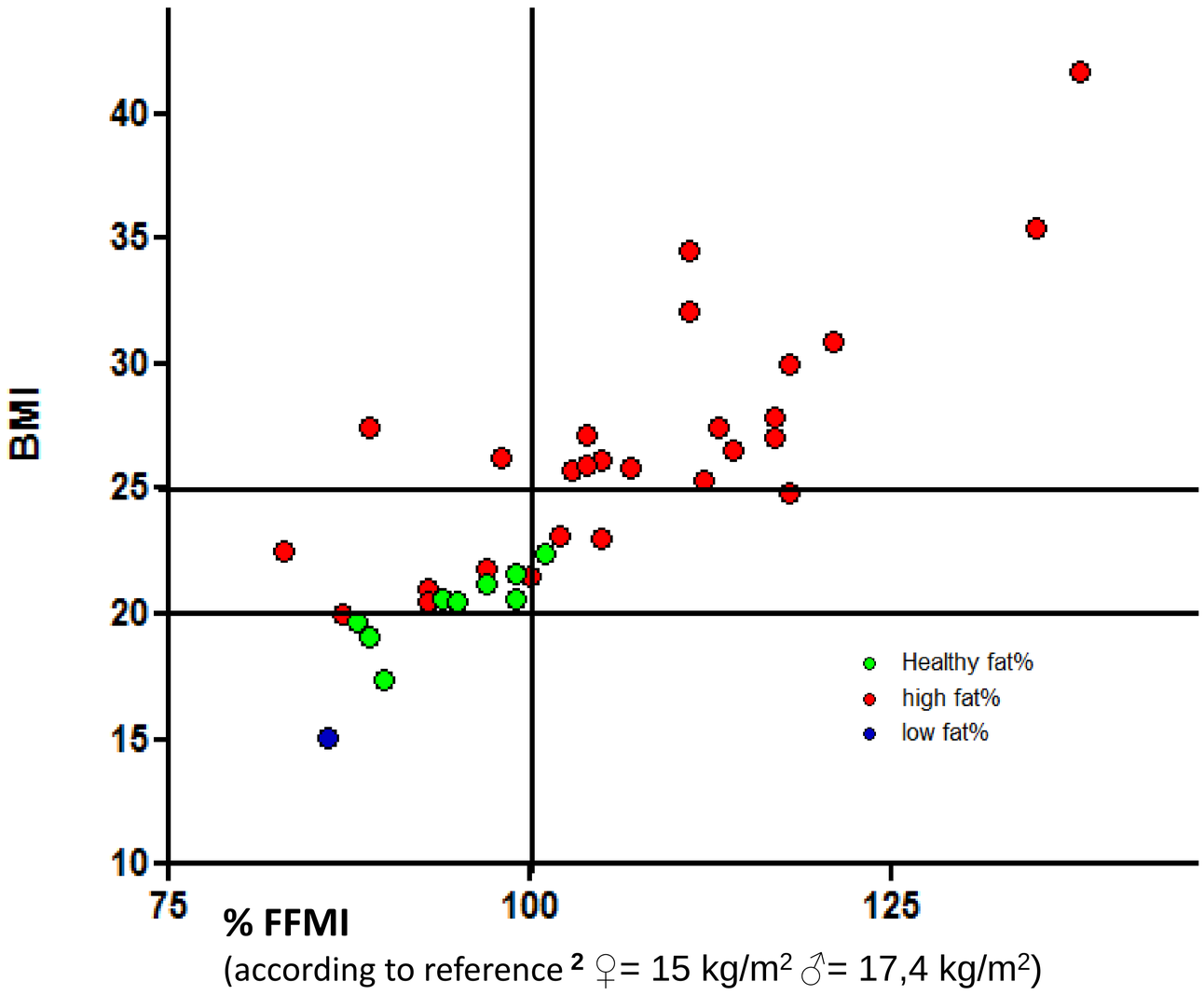
After an overnight fast height, weight and BMI of adult MD patients were measured and compared with their fat mass index (FMI) and fat free mass index (FFMI) as determined using bio-impedance. Also, BMI, FMI and FFMI were compared with their current standards for normal ranges.

Results

In total 37 MD patients age 44 ±13 yr (mean ±SD) (male: n=11) were included: 17 with chronic progressive external ophthalmoplegia (CPEO) and 20 m.3243A>G carriers. FFMI and FMI are significantly different from healthy references (Table 1).

Table 1. BC in MD patients compared with healthy references.

	Mitochondrial Disorder n=37 Mean(SD)	Healthy reference Mean (SD)
BMI (kg/m^2)		CBS 40-50 yr
Male	24,6 (7,1)	25,6 (5,4) (p=0,55)
Female	24,6 (4,7)	24,6 (8,4)
BMI< 20	14%	2%
BMI 20-25	40%	50%
BMI >25 (>30)	46% (8%)	48% (11%)
FFMI (kg/m^2)		P50 35-54 yr[1]
Male	17,8 (2,8)	19.2 (p<0,01)
Female	15,1(1,8)	15.9 (p<0,01)
FMI (kg/m^2)		P50 35-54 yr[1]
Male	6,8 (4,5)	4,8 (p<0,01)
Female	9,0 (3,4)	5,9 (p<0,01)



(according to reference [2] ♀= 15 kg/m^2 ♂= 17,4 kg/m^2)

Figure 1. Relation between BMI, FFMI and fat% in MD patients.

Fourty-eight% has deceased FFMI[2] and 29% of the MD patients suffer from sarcopenic obesity defined as low FFMI[2] combined with high fat%[3] (Figure 1).

Conclusion/ Discussion

MD patients, even those with normal BMI, have an abnormal body composition -i.e. decreased FFMI and increased FMI. Almost half of the MD patients are at risk for sarcopenia.

These results are in line with data of patients with other neuromuscular diseases. It should be investigated whether and how nutrition and/or physical intervention may improve BC and quality of life in these patients.

References

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3. WHO (2000). "Obesity: preventing and managing the global epidemic Report of a WHO consultation."

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