

Evaluation of the dual X-ray absorptiometry (DXA) to predict metabolic syndrome in HIV-infected patients.

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BACKGROUND

Metabolic Syndrome (MS) encompasses a cluster of risk factors leading to CVD as primary clinical outcome and contribute to higher risks of DM. Such factors include obesity (mainly central adiposity), defective glucose metabolism (DM, impaired glucose tolerance, or impaired fasting glycaemia), raised blood pressure, and elevated TG and low HDL-c levels. There are no studies in HIV patients that correlate fat mass determinations as assessed by dual X-ray absorptiometry (DXA) with the development of the metabolic syndrome (MS), neither its relative value in comparison with other anthropometric measurements

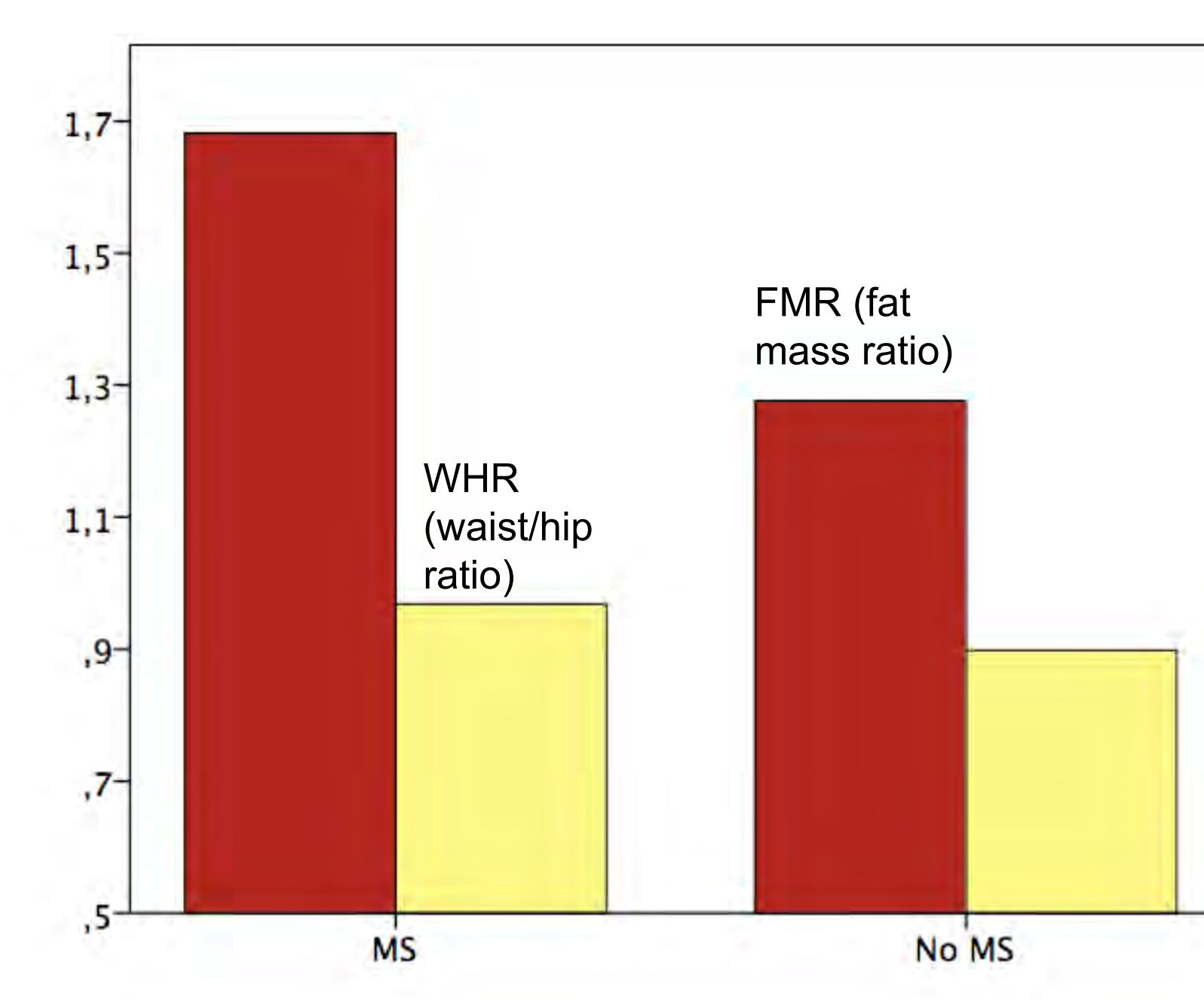
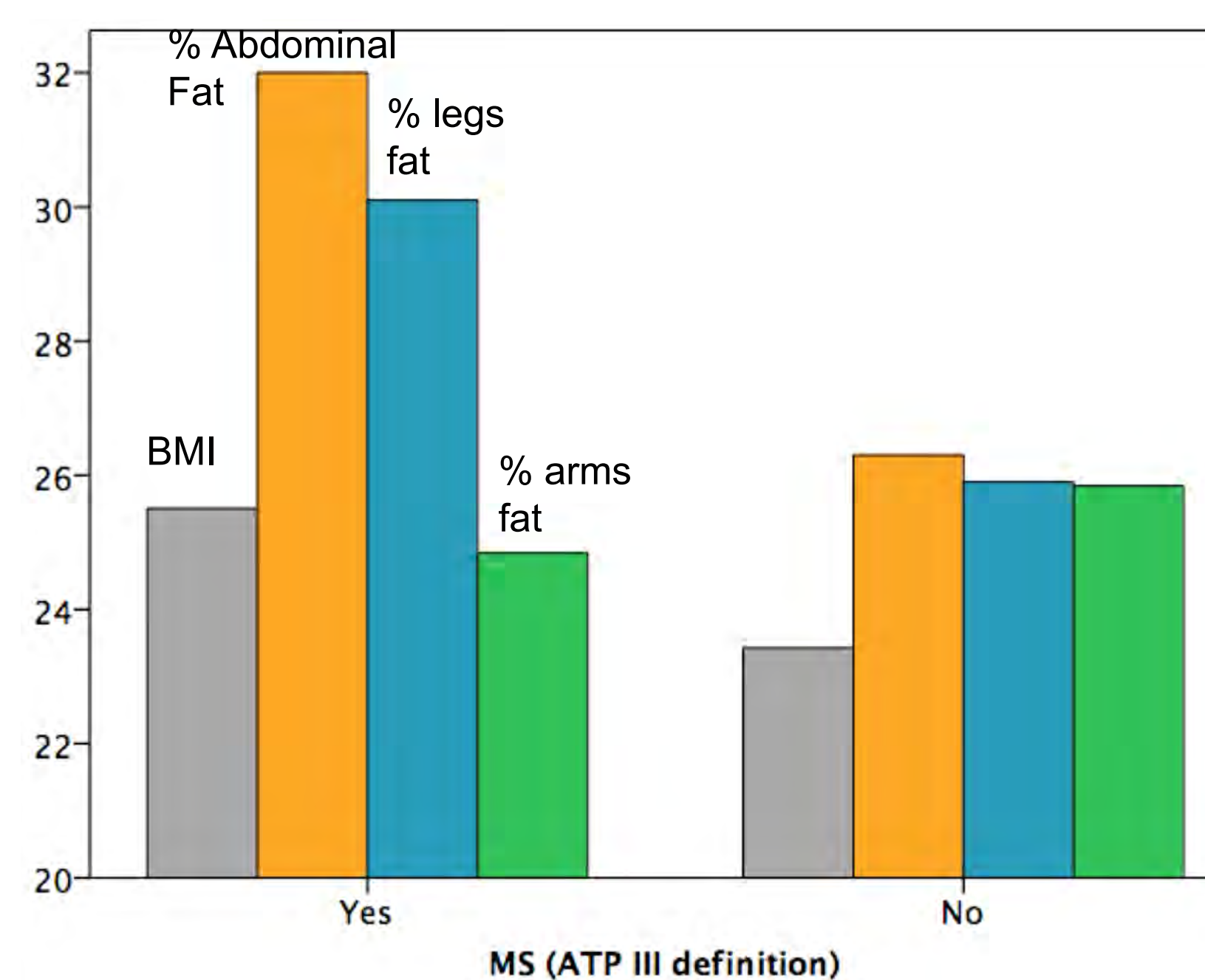
OBJECTIVES

To evaluate the predictive value of the DXA for the identification of MS in HIV-infected patients, in comparison with anthropometric measures such as BMI, waist circumference, or waist-hip ratio.

METHODS

Prospective study of 276 patients included and followed in a study about lipodystrophy and MS (NCT02614027). Body composition was evaluated with DXA scans by using an Hologic QDR-4500 model. At the same time, patients underwent measurements of weight, height, BMI, waist circumference and waist-hip ratio. MS was diagnosed attending to the criteria established by ATP-III (Adult Treatment Panel III).

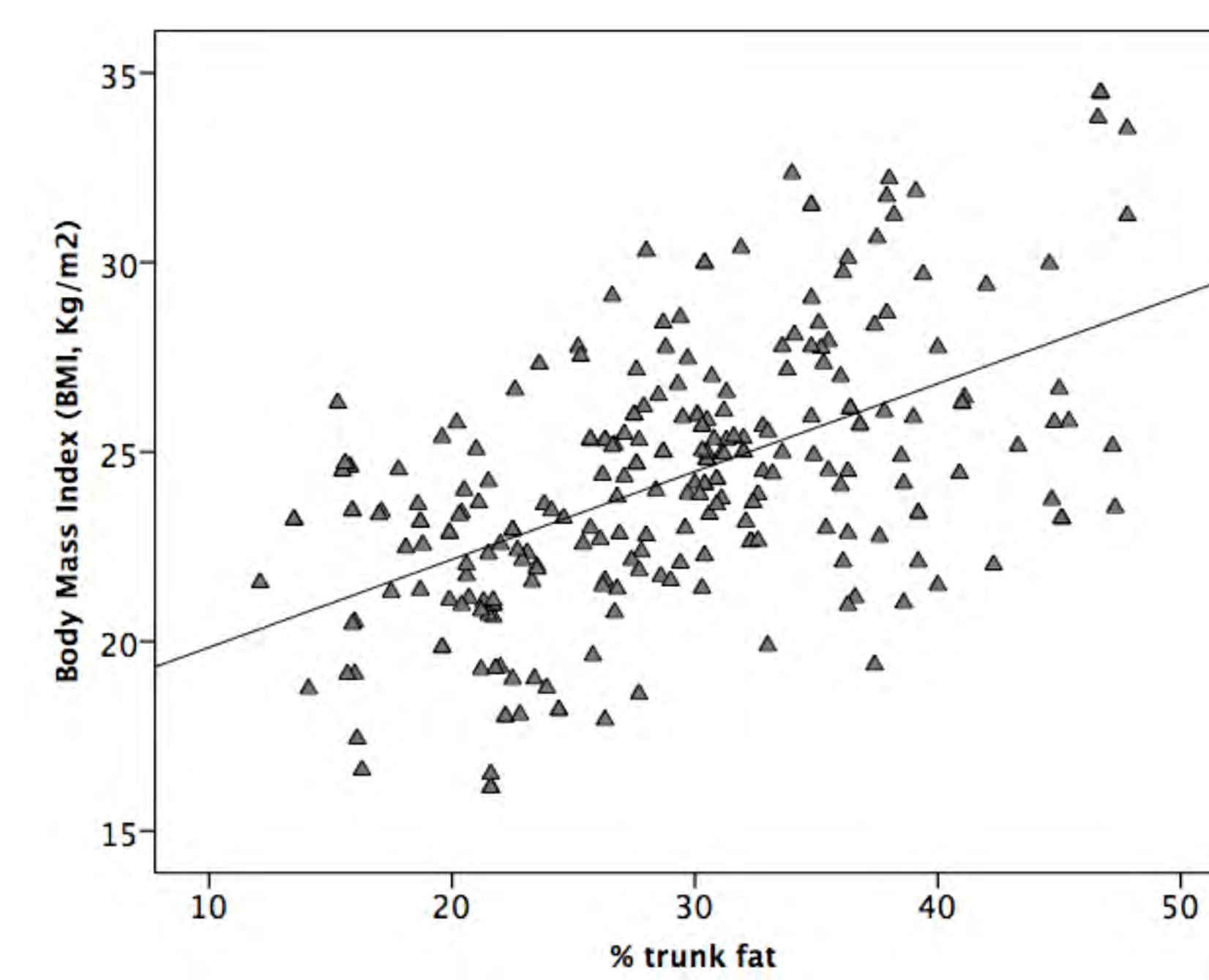
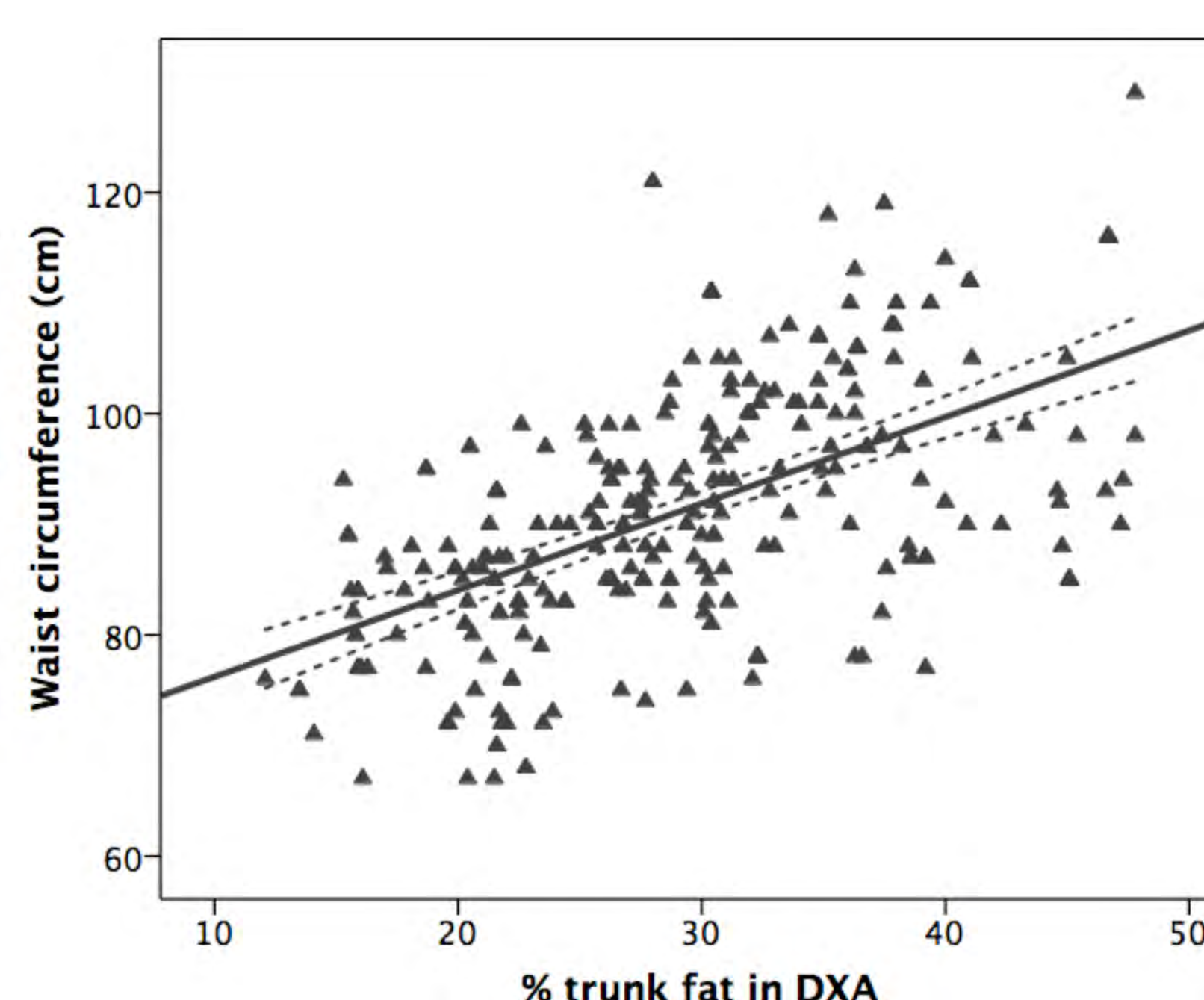
RESULTS



Overall, 111 patients (45%) met the diagnostic criteria of MS during the study. A final diagnosis of MS was correlated with higher body mass index (BMI, 25.9 vs 23.6 Kg/m²), higher trunk fat mass (%; 32.14 vs 27%, p <0.01), lower fat mass (%) in arms (21.7 vs. 31.6%, p <0.01), and there was no relationship between MS and legs fat mass. The fat mass ratio (FMR, % trunk/limbs fat mass) was also significantly higher (1.69 vs 1.27). In addition, patients with MS presented higher waist circumference (97.55 vs 86.7, p <0.01), as well as a higher waist-hip ratio (0.97 vs 0.9, p <0.01). There was a significant and close correlation between DXA trunk fat mass and waist circumference (r = 0.81, p <0.01), and with BMI (r=0.54; p<0.01).

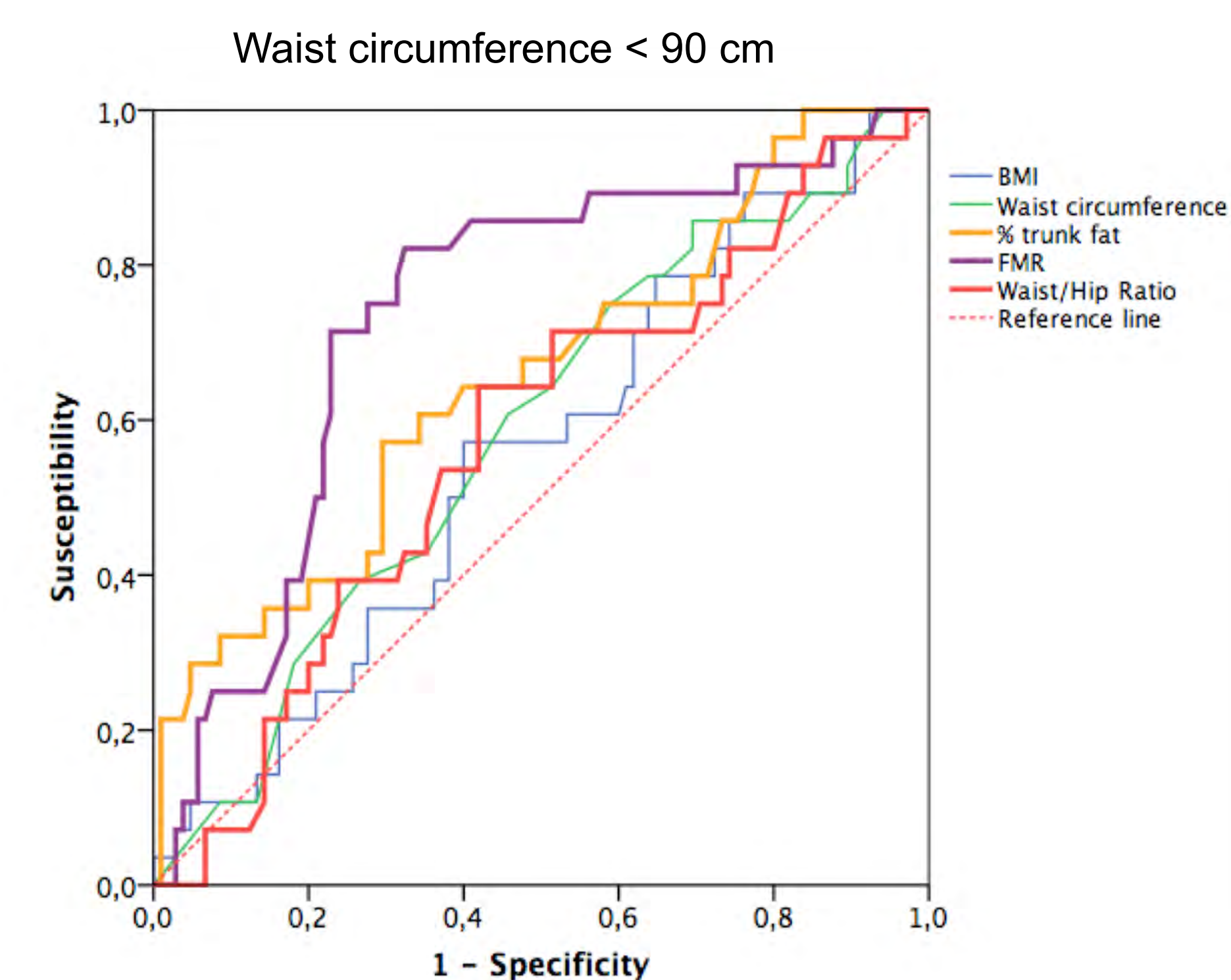
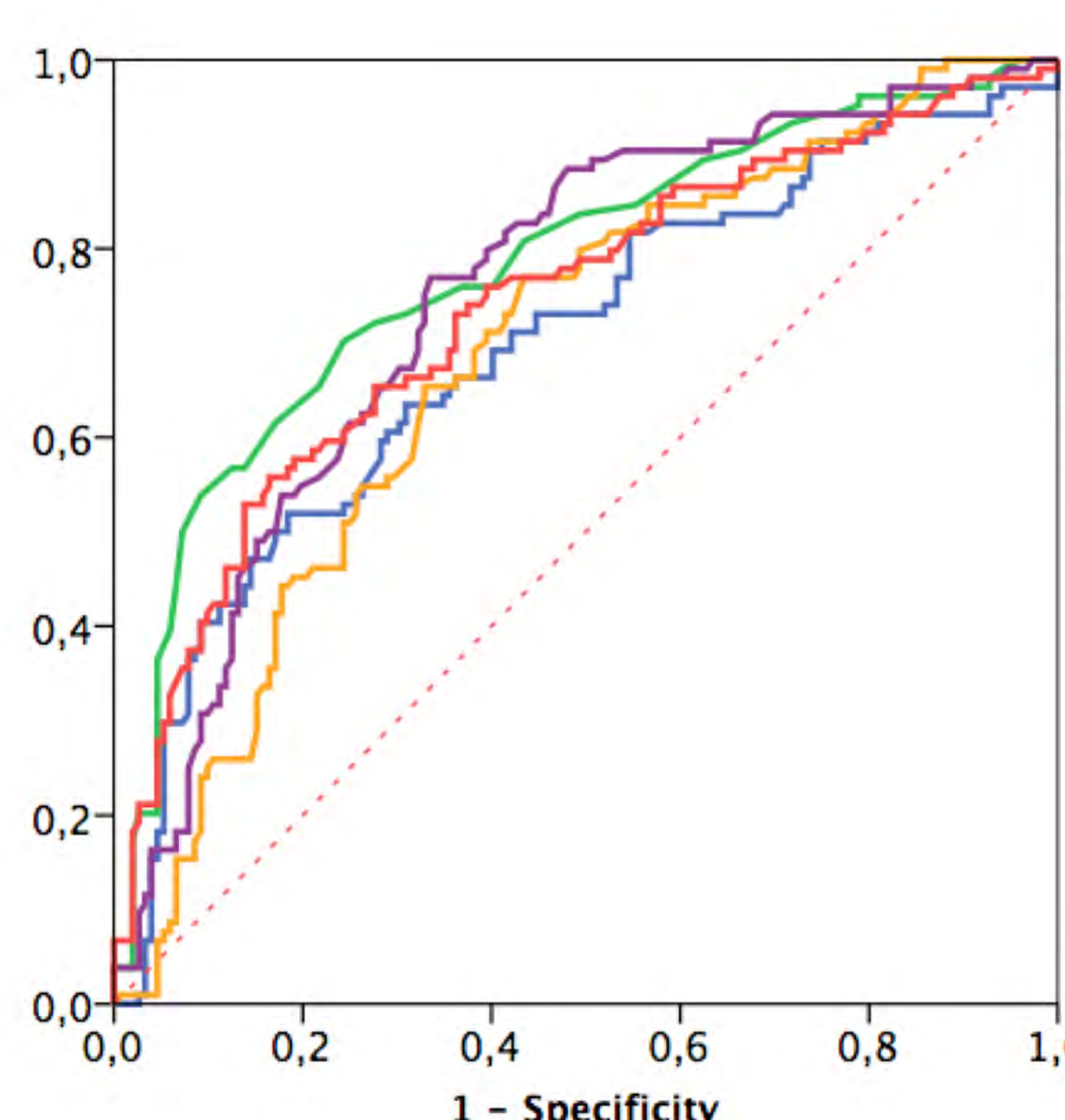
N= 276 patients

Mean age (years, range)	45.1 (20-80)
Gender male	222 (80%)
Risk practice for HIV infection	
IDUs	100 (36%)
HCV coinfection	103 (37%)
Mean BMI (kg/m ²)	24.2 (16.1-34.5)
≥ 30 Kg/m ²	6%
Median nadir CD4+ count	224 (109-337)
Time of HIV infection (years)	15 (7-21)
Cumulative time on ART (years)	9.5 (4.1-15.5)
Previous use of thymidine analogs	165 (60%)
Time on current ART (years)	3.9 (2.3-4.1)
Thymidine analogs	0
PI	129 (47%)
NNRTI	147 (53%)
DXA	
Mean trunk fat (kg)	11,3 (3-75,5)
Mean trunk fat (%)	29.1 (22.5-34.8)
Mean legs fat (Kg)	5.4 (3,7-6,4)
Mean legs fat (%)	25,6 (18,7-31)
Lipodystrophy evaluation (HOPS quest)	
0 or absent	102 (37%)
1 or mild	57 (21%)
2 or moderate	52 (19%)
3 or severe	65 (23%)
Time from LD evaluation to DXA (months)	27.8 (2-84.1)
Time from LD evaluation to metabolic study	41.6 (37-44.1)



In a ROC curve analysis in males, waist circumference (AUC 0.8), BMI (AUC 0.74), trunk fat mass (AUC 0.74), FMR (AUC 0.77), and the percentage of trunk fat mass (AUC 0.7) showed adequate usefulness for MS diagnosis, better than that observed with legs fat mass. A value of FMR of 2 showed a positive predictive value (PPV) of 70% to diagnosis MS, whereas a cutoff value of 102 cm for the waist circumference (19% of cases) denotes a PPV of 85%.

However, a higher negative predictive value (NPV) was found for the percentage of trunk fat mass in patients without abdominal obesity (NPV 95% for abdominal fat ≤18%, NPV 85% for waist circumference).



CONCLUSIONS

DXA fat determinations could be useful in the prediction of MS in HIV positive patients, by offering additional data to those obtained through anthropometric measurements.