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Pericardial/Myocardial Disease

RIGHT VENTRICULAR ADAPTATION TO MORBID OBESITY: A CMR STUDY

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Assessment of right ventricular anatomy and function in morbidly obese patients has been limited as it is particularly challenging in them. Cardiac MRI surpasses anatomical limitations providing a comprehensive dataset for assessment of RV anatomy and function. OBJECTIVES: To assess RV structure and function in morbidly obese patients.

Methods: Patients accepted for bariatric surgery were prospectively recruited. In each case, CMR was performed on a 1.5 T scanner. SSPF cine images were acquired in the 3 orthogonal axes. Manual tracings of the endocardial and epicardial borders at end-diastole and end-systole were performed.

Results: 26 patients were included, 21 (80.7%) female. Overall, mean RV mass, RVEDV, RVESV (end-systolic) and index values were within normal limits (the table). Men showed higher values of RV mass, RVEDV, RVESV and RVESV index than women. Of note, increased values of RVEDV and RVESV were detected in 33.3% and 57.1% of women. EF was only slightly reduced in two of them (EF 47.49% and 48.84%, respectively). RVEDV index was normal in all cases for both men and women.

Conclusions: In morbidly obese patients, cardiac MR provides a reliable tool for noninvasive assessment of right ventricular structure and function. RV mass does not increase in morbidly obese patients. RV end-diastolic and end-systolic volumes can be increased in morbidly obese women, but RV EF remains preserved.

	TOTAL n= 26	Normal values	MEN n= 5	Normal values	WOMEN n= 21	Normal values	p value
Age, y	41.52 (10.5)		36.47 (9.79)		42.68 (10.68)		0.02
Body mass index BMI (Kg/m2)	46.61 (7.39)		48.12 (12.62)		46.26 (7.88)		0.35
Body surface area (m2)	2.19 (0.21)		2.45 (0.16)		2.13 (0.18)		<0.001
RV MASS (g)	30.05 (8.92)	22-53	37.04 (12.53)	25-53	28.30 (7.17)	22-50	0.048
RV end-diastolic volume RVEDV (mL)	170.19 (36.9)	83-243	211.75 (16.87)	110-243	160.33 (33.33)	83-178	0.003
RV end-systolic volume RVESV (mL)	79.63 (21.03)	32-112	108.41 (14.29)	46-112	78.87 (16)	32-73	<0.001
RV stroke volume RVSV (mL)	90.55 (23.95)	44-136	103.33 (27.14)	60-136	87.52 (22.79)	44-113	0.19
RV ejection fraction RVEF (%)	54.13 (6.12)	47-70	48.28 (9.9)	47-63	54.32 (6.84)	49-70	0.11
RV mass index (g/m2)	13.72 (3.76)	13-26	15.40 (5.71)	14-26	13.3 (3.17)	13-25	0.27
RVEDV index (mL/m2)	77.79 (13.82)	47-105	86.5 (11.38)	58-105	76.05 (13.85)	47-103	0.17
RVESV index (mL/m2)	36.18 (7.59)	6-54	43.68 (4.26)	20-48	34.68 (7.25)	6-54	0.027
RVSV index (mL/m2)	41.61 (10.42)	32-71	42.81 (14.41)	39-71	41.37 (9.92)	32-68	0.80

Thetable. Right ventricular measurements in 26 morbidly obese patients
Values are given as mean (SD)