Sarcopenia: A Newly Defined Geriatric Syndrome

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Sarcopenia

- Sarco-is Greek meaning flesh
- Penia- meaning deficiency
- (IH Rosenberg 1989)

Definition of term sarcopenia

- Phenomenon of decreasing muscle mass and function
  - With aging
- → Impaired physiological capacity
- → Impaired physical performance
- → Increased risk of morbidity & mortality

Conference Held, Albuquerque NM, 1988

- Epidemiologic and Methodologic Problems in Determining Nutritional Status of Older Persons
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  - In cooperation with the National Institute on Aging

Summary Comments by Irwin H Rosenberg, MD
Director, USDA Human Research Center of Aging at Tufts University , Boston, Massachusetts

Rosenberg IH. Epidemiologic and methodologic problems in determining nutritional status of older persons. Am J Clin Nutr 1989;50(suppl):1231-1233

Syndrome of Sarcopenia

- No decline is more dramatic
- Functionally significant
- Linear decline
- Male decline differs from females
- Females show sharp decline at menopause
- Ambulation
- Mobility
- Calorie & nutrient intake and status
- Independence
- Breathing

First Article using Term Sarcopenia

RN Baumgartner, KM Koehler, D Gallagher, L Romero, SB Heymsfield, RR Ross, PJ Garry, and RD Lindeman.

Epidemiology of Sarcopenia Among the elderly in New Mexico.

Am J Epidemiol 1998;147:755-63

Cited > 300 times

Table 1 NM Study Sample (NMEHS) of Elderly and One Reference Group

	Men		Women	
	NMEHS (n=426)	Rosetta Study (n=107)	NMEHS (n=382)	Rosetta Study (n=122)
Category (sd)				
Age (yrs)	73.6(5.8)	28.7(5.1)	73.7(6.1)	29.7(5.9)
Weight (kg)	76.2(12.1)	78.3(12.5)	64.1(12.7)	65.0(15.2)
Height (cm)	171.3(6.9)	178.4(6.6)	158.4(7.3)	163.5(6.7)
% Body fat	27.4(4.5)	18.2(6.8)	38.7(5.8)	26.4(6.1)
ASMM* (kg)	22.5(2.6)	27.3(3.6)	14.5(2.2)	17.7(3.7)

*Appendicular skeletal muscle mass

Table 2 Prevalences (%) of sarcopenia* in the NMEHS by age, sex, and ethnicity, 1993-1995

	Men		Women	
Age group (years)	Hispanics n=221	Non-Hispanic whites n=205	Hispanics n=209	Non-Hispanic whites n=173
<70	16.9	13.5	24.1	23.1
70-74	18.3	19.8	35.1	33.3
75-80	36.4	26.7	35.3	35.9
>80	57.6	52.6	60.0	43.2

Appendicular skeletal muscle mass less than two standard deviations below the mean value for young adults from the Rosetta Study

Table 3 Associations of sarcopenia* with physical disability or a history of injury, NMEHS. 1993-1995

	Men		Women	
	%	Odds ratio	%	Odds ratio
≥ Disabilities	16	3.66	33	4.08
>1 balance abnormality	28	3.23	8 NS	1.77
>1 gait abnormality	25	1.87 NS	21 NS	1.12
Use of cane or walker	14	2.29	17 NS	1.79
Fell during past year	22	2.58	31 NS	1.28

*Appendicular skeletal muscle mass less than two standard deviations below the mean value for young adults from the Rosetta Study
NS=Not statistically significant

Causes and Prevention/Treatment

- Alpha motor neuron decline
- Growth hormone production
- Sex steroid levels
- Physical activity
- Inadequate dietary intake
  - Protein
  - Total energy intake
- High intensity progressive resistance exercise
  - Slows development earlier in life
  - Helps reverse in elderly

Conclusion

Physicians can…

- Encourage patients to exercise (high intensity progressive resistance exercise)
- Encourage adequate energy intake, especially protein