

SUPERNOVA phenomenon in unique population exposed to starvation in early life

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Background: Modern concept of supernormal vascular aging (SUPERNOVA) can be verified in subjects with exceptionally low arterial stiffness for their age. Among subjects who were exposed to severe famine in the prenatal and early childhood period of life during Leningrad Siege 1941–1944 those who survived now reached advanced age of 75 years or more. As caloric restriction can be associated with slowing of arterial stiffening this group can be expected to have subject with SUPERNOVA phenomenon.

Purpose: The aim of the study was to assess predictors of SUPERNOVA phenomena in survivors of the Leningrad Siege according to different gender.

Design and methods: The arterial stiffness was assessed by Sphygmocor device (carotid-femoral pulse wave velocity (PWV)) in 232 survivors of Leningrad Siege in 2014. Blood pressure (BP) measurement and anthropometry (weight, height, waist circumference) were performed according

to standard protocols. Fasting serum lipids and plasma glucose were measured by Hitachi-902. According to The Reference Values for Arterial Stiffness Collaboration (2010) for Siege survivors group (over 70 years old) the median value (10–90 percentile) of the PWV is 8.0–14.6 m/s. SUPERNOVA phenomenon was determined in case of PWV ≤ 8.0 m/s. 35 (11,3%) participants had SUPERNOVA phenomenon: 9 males and 26 women, non-SUPERNOVA group of 50 males and 147 females was a control group.

Results: Comparative gender analysis revealed common and distinct predictors of SUPERNOVA presence.

Conclusions: Independently of gender SUPERNOVA phenomenon was observed in subjects with lower BP. In females normal triglycerides levels were associated with low arterial stiffness while in male gender lack of abdominal obesity was also important.

Significant gender differences

Parameter	SUPERNOVA	NON-SUPERNOVA	p
Females			
Mean age (years)	75,1 \pm 3,2	74,7 \pm 2,7	0,47
Systolic blood pressure (mmHg)	129,3 \pm 18,3	154,0 \pm 23,5	0,03
Diastolic blood pressure (mmHg)	72,1 \pm 9,4	81,2 \pm 11,0	0,01
Triglycerides (mmol/l)	1,08 \pm 0,44	1,40 \pm 0,62	0,02
Males			
Mean age (years)	75,4 \pm 1,8	74,7 \pm 2,3	0,39
Systolic blood pressure (mmHg)	136,4 \pm 8,6	151,1 \pm 21,6	0,04
Waist (sm)	88,6 \pm 9,5	97,8 \pm 11,8	0,03