Long term mortality after starvation during the Leningrad siege
Authors’ reply

EDITOR—Croft makes the point that children of fat parents would have had a better chance of surviving the Leningrad siege: obese parents would be more likely to survive and protect their children. This may not have been the case. One of us who survived the siege (DS) recollects a common impression that fat people were among the first to die. Observing Russian prisoners of war, Leyton found “a big well-built man standing up to shortage of food less well than his smaller brother.”¹

Siege survivors were not fatter than other war survivors when both groups were examined in 1975-7 (table 1 in the long version of our paper on bmj.com), and adjustment for body mass index did not reduce our estimates of siege effects. Croft’s hypothesis, moreover, would be unable to account for the interaction with age.

Bell suggests that the stress of war may have caused hypertension and circulatory mortality 30-60 years later. We agree that prolonged bombardment constitutes a considerable stressor, as do food shortage, starvation, and threat of starvation; most deaths were indeed due to starvation.² The endocrine profile of severe starvation in several aspects mimics that of reaction to stress. In the short version of our paper we said that “starvation is entangled with the trauma of the siege.” Whatever the biological pathway, the fact remains that the effect on cardiovascular mortality of exposure to siege strongly interacted with (peri-pubertal) age and was partly mediated by hypertension.

Nutritional intake was extremely low for a period even after January 1942, when bread rations went up to 250 g.² Six months of severe food shortage, followed by hard physical work during refeeding triggered the “Leningrad blockade hypertension epidemic.”³ We suggest that this hypertension epidemic was particularly pronounced among peri-adolescent boys since energy restriction or deficiency of certain nutrients around puberty may be more likely to interfere with blood pressure regulation.⁴

Raised blood pressure was still visible when subjects were examined in 1975-7. Surely it is not “redundant” to suggest that the starvation episode also played a part in the increased mortality from circulatory disease some 20 years later.

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Competing interests: None declared.

References


