



Starvation osteoporosis and the next generation. A family case report

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Abstract

Early life metabolite deprivation was recognized as predisposing to later life premature osteoporosis and transferred to the next generations. No retrospective studies on WWII time deprivation could be performed, hence studies are conducted on survivors and their descendants. These are no scientific, no epidemiological /statistical, they could only be observational studies. The present case report of a family with osteoporosis premature in father and premature in adults, ought to be brought to awareness and could raise the possibility of inheritance.

Case report

Father in this family was a 13 year when WWII reached Poland in 1939. This young male escaped from the Ghetto in Lwow, was left to wander in countryside for the coming 3,5 years. He was fed intermittently by peasants, eventually reaching the capital, where he was hiding for close to one year. Nutrition was reduced and intermittent and at the end almost inanition for close to 4-5 weeks. He was found in a semi-conscious state, was hospitalized, revived, and gradually fed. He reached the normal height of 167cm. He finished high school with distinction and was planning for medicine. This has only eventuated later. He was aged 27, had a light fall and suffered a fractured base of neck of femur, so typical of old age. He was treated with insertion of pin, and despite thin bony cortex, visible on plain x ray, the fracture has united. He suffered further rib fractures from cough event during recurrent bronchitis. He emerged with a successful and on retirement, aged 71, his advanced hip arthritis was replaced with prosthesis. All the biochemical data and hormonal studies within normal limits. His Dextra bone densitometry showed advanced osteoporosis. (Table 1).

Daughter no 1.: was diagnosed at the age 48 with osteoporosis despite normal lifelong nutrition. She continued with regular menstrual cycle, and hormonal and biochemical studies were within normal limits. No fracture eventuated.

D daughter no. 2: was, aged 46 was, diagnosed with osteopenia, with normal menstrual cycle, had al biochemical and endocrinological parameters within normal limits and was also put on oral medication. No fracture eventuated.

The youngest sibling, DOA, a male aged 45, was found with bone densitometry bordering osteopenia.

Discussion

Despite sufficient food, the twentieth century remained in shame for the high level of famine induced Starvation and Mortality [1]. The WWII and postwar periods as well as in the new century a huge population transferred occurred, transfer or immigration from third world country with starvation and/or wars. Studies were coming from the starvation imposed on Leningrad and Holland during the war as well as on the Chanel Islands. Studies indicated various metabolic variations Studies were extended on population transfers in China with late detected consequences as well as from Biafra war, Sudan and Ethiopian starvation and transfer of population from Pacific islands to Australia. . . Extensive studies of metabolic (glucose and lipids) were conducted, the study of bone metabolism was tardy to emerge.

The need for metabolites, vitamins and minerals for appropriate bone genesis is well known and was previously published in detail. The nutritional deficiency, whether during gestation or early childhood was considered as either Primary or Secondary Famine Osteopathy [2,3].

The father in the above presented family would fall within the secondary category, whilst the children would be primary.

The early adolescence nutritional deprivation is responsible for premature adult, or Secondary Famine osteopathy. Despite the normal nutrition, the children were diagnosed with early bone metabolic derangement in pre-menopausal period, an obvious epigenetic inheritance and is Primary Osteopathy [4-14]. The effects were studies in various countries where survivors settled after the war [11,12,14].

Studies within the Ghetto Warsaw during WWII by a group of eminent physicians, (whilst hungry themselves), documented the children's Primary Osteopathy, consisting of both osteomalacia and osteoporosis. Indeed, fractures were not healing, and internal fixation of bone was abandoned [13].

Family inheritance of genetic disposition emerging from early life famine, was documented in two, and even in three

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Table 1: Bone densitometry in a famine survivor and his descendants.

Name	Age	Nutrition in childhood	Fractures	T-score/Z-score
Father DW	71	Sub-nutrition, semi-starvation	Femur, ribs	-4.4/-3.1
Daughter I	48	Normal	None	-3.1/-2.2
Daughter II	46	Normal	None	-2.2/-1.7
Son	45	Normal	None	-1.2/-0.8

generations before. The present family constitutes yet another example of two generations within the family.

The search for and the diagnosis of early osteoporosis is the duty of the family practitioner and of the State Authorities.[15].

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