

High multiple births in Bulgaria

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23 triplets, 1 quadruplet and 1 quintuplet from different regions of the country are investigated. The physical development by two global measures – stature and weight are studied up to the end of the 2 years of age, and in comparison with the same measures for singletons. Genealogical analysis of the twin families also is made.

Key words: twins, triplet, quadruplet, quintuplet, physical development, genealogical analysis, stature, weight.

The birth of triplets, quadruplets etc. twin-sets has two different aspects. As biological phenomenon the high multiple birth happens more rarely than the twin birth, but according to our opinion more significant is the genetic aspect of the phenomenon. Mostly, the triplets and quadruplets as a “mixed genetic model” are suitable examining the complex regularities of the human heredity. The possibilities of zygosoty combinations increase with the number of the partners – for the triplets they are 7, for the quadruplets are much more, etc.

Our twin investigation covers a 25 years period during which are studied 23 triplets, 1 quadruplet and the only quintuplet born not only in Bulgaria, but in the Balkan Peninsula. Some of the children live in Sofia, and other in Plovdiv, Sliven, Kotel, Silistra, Varna, Shumen, Stara Zagora, Kazanluk. The quadruplet is born and live in Kardjally, and the quintuplet in Srednogorie town. In all cases, except the quintuplet, the birth of the twin-sets follow the well known biological regularities of the high multiple birth (without therapeutical intervention). The quintuplet is born after 3 years sterility of the married couple. After that the mother was treated for 2 years with steroids, and the father having oligospermia – for a year. The result of the therapy is the birth of the quintuplet – 2 boys and 3 girls.

The results presented from us are only of triplets etc. whose partners are alive at the moment of the last consecutive study. The number of the children born from high multiple births during the investigated period are much more than the examined from us, which can be seen in Table 1 made on the basis of data from Central Board of Statistics.

Table 1. Type of twins and triplets

Year	Total	♂♂	♂♀	♀♀	♂♂♂	♂♂♀	♀♀♂	♀♀♀
1966	904	288	292	320	2	1	—	1
1967	840	275	254	307	1	—	1	2
1968	956	324	291	337	2	—	1	1
1969	1029	334	336	352	1	1	3	2
1970	972	344	283	339	2	1	2	1
1971	987	351	306	326	1	1	—	2
1972	911	298	264	388	2	1	4	4
1973	987	340	296	332	8	—	—	2
1974	1079	395	328	351	1	—	1	3
1975	1047	377	302	358	3	3	—	4
1976	1058	382	319	354	—	1	2	—
1977	971	309	309	344	4	1	3	1
1978	890	298	271	320	—	—	1	—
1979	858	321	248	283	—	3	3	—
1980	869	287	263	310	1	2	2	4
1981	804	288	219	289	1	2	2	3
1982	965	358	293	318	1	2	—	1
1983	959	347	301	307	1	1	2	—
1984	767	297	216	251	1	1	1	—
1985	607	315	130	159	1	—	—	2
1986	958	341	295	316	—	3	2	1
1987	925	284	294	338	4	1	2	1
1988	922	309	285	321	1	2	1	3

By zygosity the investigated triplets covered nearly all theoretical possibilities of combinations (Fig. 1). The monozygotic triplets are 6 — 2 boy-triplets, and 4 girl-triplets. Greatest is the variety of dizygotic triplets. They are both same-sexed boys or girls, and mixed-sexed in combinations — 2 boys with a girl, and a boy with 2 girls. A three zygotic same-sexed triplet (girls) also is studied (Fig. 2).

The only alive quadruplet in Bulgaria is also threezygotic, mixed-sexed. The boy is from the 1-st zygote, from another zygote is one of the girls, and from the third zygote are the next two girls. The zygosity can be well seen at the photograph (Fig. 3).

The quintuplet born after steroid therapeutics of the both parents is 5 zygotic according to our examination. This diagnosis will be fortified completely in some years when we'll be able to make more detailed serological investigation. At present only two blood group systems of the children are analysed (Fig. 4).

During the first 2 years of the early childhood the growth and the physical development of the twin-children are examined by the two global measures — stature and weight. Some of the children have been for a short or long time in the neonathological hospitals in Sofia, and the other big towns. At Fig. 5 we present by gestation weeks term the weight of the children from high multiple births in comparison with the weight of the singletons. This term varies between 33 and 39 gestation weeks, and the degree of prematurity is different for the triplets, quadruplet and quintuplet.

The results from the measurements of stature and weight (some of them are taken in different intervals according to the special conditions) are given in two figures. Figures 6, 7 are for weight and stature at the end of the 1-st, 2-nd years, respectively for singletons and children from high multiple births.

Instead of the different degree of prematurity (for the MZ partners of the quadruplet it's of IV degree) up to the end of the second year of age nearly all the

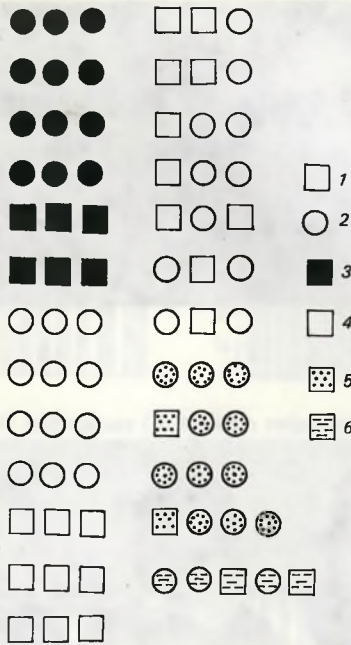


Fig. 1. Type of triplets, quadruplet, quintuplet
 1 - boys; 2 - girls; 3 - MZ; 4 - DZ; 5 - TZ; 6 - FZ



Fig. 2. TZ girls



Fig. 3. TZ quadruplet



Fig. 4. FZ quintuplet

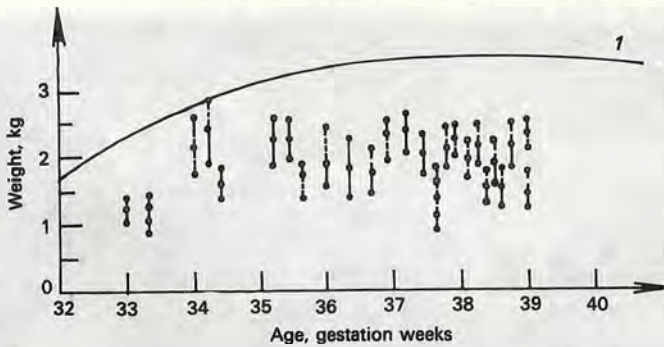


Fig. 5. Comparison between weight of singletons and twins
1 - singletons

twin-children of the high multiple births overtake the singletons by this two measures. The special cares of this children in the hospitals and at home are very important, probably, for their physical development in the first two years of their life.

Family trees of all the triplets, the quadruplet, and the quintuplet are made, and some of them deserve a special examination.

In two cases the mothers of the triplets are twins (Figs 8, 9). The first triplet is MZ-girl-set, and the second - DZ-boy-set.

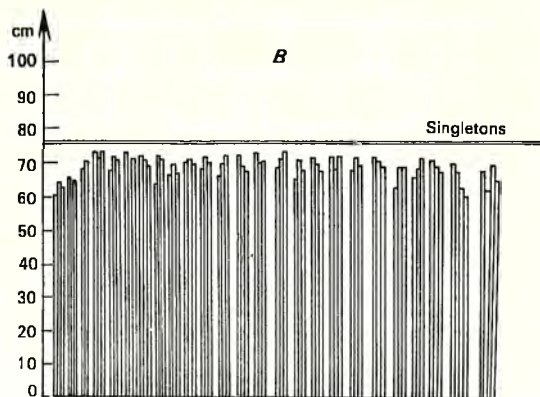
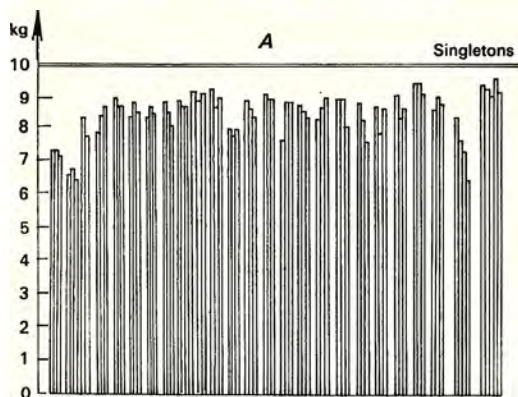


Fig. 6. Comparison of weight (A) and stature (B) between twins and singletons at the end of the first year of age

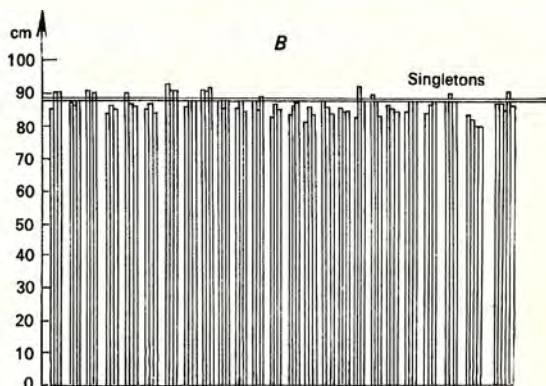
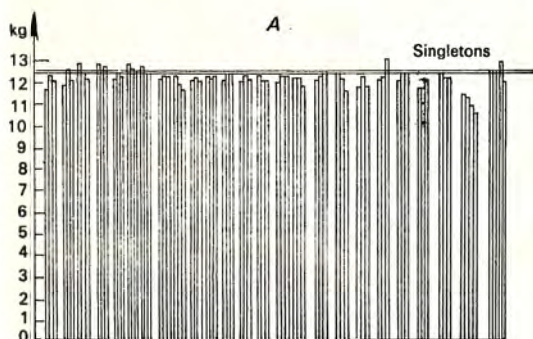


Fig. 7. Comparison of weight (A) and stature (B) between twins and singletons at the end of the second year of age

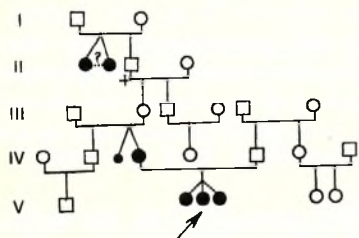


Fig. 8. Family tree of MZ triplet from Sofia

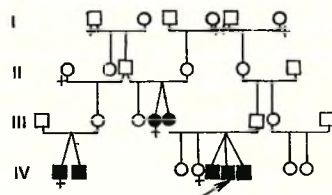


Fig. 9. Family tree of DZ triplet from Silistra

The next family tree shows that the mixed-sexed triplet is born from a second marriage of the father who has also a mixed-sexed twin-couple from his first marriage. The father's family tree is burdened with two more twin-couples, while for the two wives we have no data for twinning (Fig. 10).

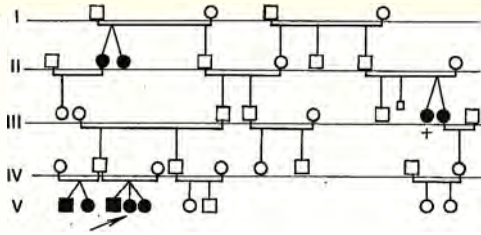


Fig. 10. Family tree of DZ triplet from Sofia

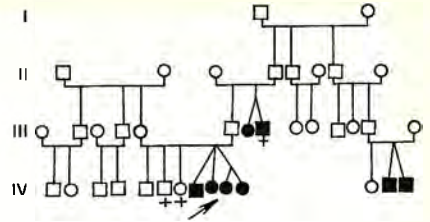


Fig. 11. Family tree of TZ quadruplet from Kardjally

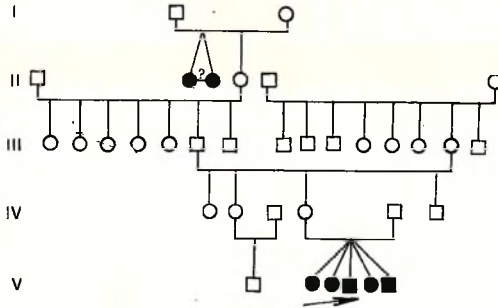


Fig. 12. Family tree of FZ quintuplet from Srednogorie

In the quadruplet family tree can be seen that only in the father's family there are twins (Fig. 11).

On the family tree of the quintuplet instead of the numerous births (the parents are Gipsies) the twinning factor didn't exist (Fig. 12). About the steroid therapy in this case we have spoken already.

At the end we can afford to make the following conclusions:

1. The biological factor of multiple birth in man changes on the one hand with the reduction of the birth-rate, and on the other hand with the antisterility therapeutics.

2. The high multiple birth children in spite of their prematurity, and their smaller measures on birth in many cases under good cares, overtake the physical development of the singletons during the 2-3 years period of their early childhood.

3. The family trees analysis allows to be made two basic conclusions which not all the authors share.

A. The fertility of twinning doesn't decrease.

B. The factor of multiple birth in man isn't connected only with the female sex.

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