Growth of Maltese babies in the first year of life.

Dr. E. A. Cachia, M.B., B.Ch. D.C.H., In conjunction with *M.W. Grant*

Nature of the material.

The data available for analysis consisted of weight records for 409 infants (201 male and 208 female) attending local welfare clinics, also available were

Reference number
Sex
Place in family
Age (at time of first attendance)
Weight (in 1st month, 2nd mth, 3rd... 12th mth.)

Entries under the heading '4th mth" were for infants more than three months old but not yet four months and that the mean for the group would therefore be $3\frac{1}{2}$ months. Similarly for all other groups except the first. As very few babies were brought to the clinic in the first two weeks of life the mean age of the "1st month" group was naturally nearer the whole month. It was possible to calculate the true "mean age" of the "first month" group as age at time of first attendance had ben noted: this age was found to be 24 days.

The facilities available at the clinics preclude the undressing of babies as a matter of routine and that they were therefore weighed clothed, the mother being asked to bring with her to the clinic a bundle of clothes similar to those the baby was wearing. This bundle was also weighed and its weight deducted from the clothed weight of the baby, the clinic nurse then entering this difference between the two weights on the child's record card. Such a method of arriving at the baby's weight is bound to give rise to more errors than would occur if the weight could be obtained direct but it is not felt that it necessarily invalidates group averages as the total number of records obtained (3257) was reasonably large; moreover, all individual records were graphed and nearly all gave remarkably smooth curves.

Only 25 babies (eleven girls and fourteen boys) were brought for weighing every month throughout the first year of life. The others were brought only at irregular intervals but scrutiniy of individual records gave no evidence of a return after an absence of two or three months being in any way associated with any failure to gain weight in the interim.

TABLE 1.

Meanweight for age, month by month. (Maltese Babies)

Age group.	*Number of records*		*Mean weight (lbs.)*	
Month.	Male.	Female.	Male.	Female.
1st.	125	127	8.50	7.94
2nd	193	183	10.18	9.71
3rd	173	192	11.84	11.20
4th	172	179	13.27	12.48
5th	176	177	14.63	13.98
6th	154	158	15.69	14.89
7th	140	143	16.83	15.95
8th	129	118	17.60	16.76
9th	121	119	18.57	17.39
10th	98	92	19.33	18.21
11th	72	77	19.90	18.98
12th	67	72	20.97	20.61

Overall average growth curves

The first analysis undertaken was a straightforward calculation of the mean weight of all male infants and all female infants on the basis of age at one month intervals. The findings are set out in Table 1 and charted in Figure 1, where they compared with London averages. The chart shows clearly that Maltese babies and London babies are very similar in weight in the first two to three months of life but that, after that, the London babies gain weight more rapidly than their Maltese counterparts.

TABLE 2.

grouping by position in family.

Position in family.	*Number in group.*		
	Boys.	*Gilrs.*	*Total.*
1st child	65	66	131
2nd ,,	31	41	72
3rd ,,	27	13	40
4th ,,	20	22	42
5th ,,	14	21	35
6th ,,	6	13	19
7th ,,	7	6	13
8th ,,	11	7	18
9th ,,	6	7	13
10th ,,	4	3	7
11th ,,	4	3	7
12th ,,	—	4	4
13th ,,	—	1	1
14th ,,	1	—	1
15th ,,	1	—	1
16th ,,	2	—	2
22nd ,,	—	1	1
Unspecified	2	—	2

Effect of position in family

Maltese families tend to be larger than London ones and although various workers have reported that birth weight increases with parity we know of no observations which show whether the greater weight of the later children at birth is maintained throughout their development. It is conceivable that the poverty so often associated with large families might so restrict their food supply that their initial advantage would soon be lost. Table 2 groups the children in the present series according to position in family.

It is unfortunate that no birth weights were available. It was, however, decided to test the relationship betwen weight in the third, sixth and ninth month of life and the child's place in the family. The numbers in the groups were small and the range in weight was considerable but the figures suggested a tendency for the weight at $2\frac{1}{2}$ months, $5\frac{1}{2}$ months, and $8\frac{1}{2}$ months, to be a little less in the later children; certainly they were not heavier.

TABLE 3.

Comparison of overweight and underweight groups.

	Male.		*Female.*	
	heavy.	light.	heavy	light.
Number in Group	17	22	13	22
Weight (lbs) at $2\frac{1}{2}$months	13.49	10.42	13.09	9.03
Weight (lbs) at $8\frac{1}{2}$months.	22.73	14.97	21.10	13.57

Comparison of over-weight and under-weight sub-groups

One hundred and twenty-one male infants were weighed in their ninth month and gave a mean weight of 18.57 pounds. Twenty-one of these children weighed over 21 pounds and twenty-nine weighed less than 17 pounds; of the heavy weights, seventeen had also been weighed in their third month and of the underweight children, twenty-two had also been weighed at this earlier age. It was found that the group which weighed most at $8\frac{1}{2}$ months had already been weighing more at $2\frac{1}{2}$ months of age but that, whereas they maintained roughly the same position relative to the London line, the

underweight group fell progressively further behind.

Analysis of the weights for the female babies showed the same phenomenon. The pertinent figures are set out in table 3 and shown graphically in figure 2.

It is clear that the Malta growth curve is deflected downwards by the behaviour of this underweight group and it was decided to investigate the nature of their growth in more detail. Typical individual growth curves from children in this group are shown in Figure 3 Nos. 34, 68, 203, 246). They indicate long periods when growth seems to be almost at a complete standstill, and the child merely holding what it had attained in the first three or four months of life. This is what happens experimentally when test animals are kept on minimal rations and one must ask whether these Maltese babies were also getting only enough food for maintenanse and not enough to permit their bodies to develop normally.

It seems unlikely that this growth retardation is due to disease, unless a chronic low-grade infection could produce this effect without calling attention to itself in any other way. A sharper infection, or a bout of diarrhoea, may cause temporary loss of weight but this is usually rapidly regained and the previous growth pattern resumed (this is illustrated by the curves for Nos. 51 and 249 in figure 3).

The possibility that these growth plateaus might indicate cases of hypercalcaemia must also be considered, as high dosage with Vitamin D in one form or another has been very popular in Malta in recent years; even without the use of additional concentrated sources of this vitamin, it appears that hypercalcaemia of which the only outward sign may be a "failure to thrive" — can arise from prolonged use of irradiated, or vitamin D enriched, dried milk or other infant foods.

Certainly children exhibiting a tendency towards this plateau type of growth require detailed investigation. An assessment needs to be made of their average dietary intake and it would be very valuable if data could be obtained about their growth in length which might continue despite the failure to gain weight. Such a growth pattern may give rise to abnormal composition of body tissues.

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