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## Effects of water supplementation on physiological jaundice in breast-fed babies

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**SUMMARY** The effect of water supplementation in normal, term, breast-fed babies with physiological jaundice was studied. Water supplementation was given to 120 babies and 55 received no extra fluids. There was no significant difference between the two groups when peak serum bilirubin levels and incidence of phototherapy were compared.

Although there is conflicting evidence about the incidence of hyperbilirubinaemia in bottle- and breast-fed newborn infants, recent reports support the view that jaundice occurs more often, and with relatively higher serum bilirubin concentrations, in breast-fed infants.<sup>1-3</sup> Breast-fed babies lose more weight in the first few days of life and, in the past, this was thought to be related to the presence of jaundice.<sup>4</sup> It is therefore common to give water supplements to breast-fed babies in an attempt to reduce the severity of jaundice. However, the use of water supplements may interfere with both the establishment and duration of breast-feeding.<sup>5</sup> The present study was undertaken to determine the effect of water supplementation on the course of physiological jaundice in breast-fed babies.

### Patients and methods

Between 1 June and 31 November 1979 infants in the postnatal wards at this hospital were placed in one of two groups. In group 1 (n=55, one ward) breast-fed babies received no fluid supplementation from birth, and in group 2 (n=120, three wards) water supplementation was given *ad libitum* at the end of each breast feed. All babies were fed on demand and received the first feed within 3 hours of birth. Only normal term babies whose birthweight was 2.5 kg or more were included.

Babies who were considered to have physiological jaundice entered the study if the serum bilirubin concentration reached 200  $\mu\text{mol/l}$  (11.7 mg/100 ml). Phototherapy was started at a serum bilirubin level of 320  $\mu\text{mol/l}$  (18.7 mg/100 ml). Any baby with rhesus disease, hypothyroidism, or congenital infection was excluded. Any baby with a definite diagnosis of ABO haemolytic disease was excluded, but it is possible that a few babies with very mild disease were included because of the difficulty in making the diagnosis.

All blood specimens were taken daily by heel-prick and the serum bilirubin concentration was measured using an American optical bilirubinometer.<sup>6</sup>

There was no significant difference between the groups for number of deliveries by forceps, caesarean section, or ventous extraction. There were 8 breech deliveries in group 2 and none in group 1.

### Results

As can be seen from the Table, there was no

Table Data (SD) for the two groups of infants

	Group 1 (n=55) (no supplement)	Group 2 (n=120) (water supplement)	Significance of different incidence
Mean birthweight (g)	3249 (397)	3372 (411)	NS*
Mean lowest weight (g)	3034 (386)	3181 (396)	P < 0.05
Mean weight loss (g)	215 (116)	191 (91)	NS*
Mean peak serum bilirubin ( $\mu\text{mol/l}$ )	263.5	260	NS
Mean age at time of peak bilirubin (days)	4.62	4.64	NS
Number receiving phototherapy	8	11	NS†

Conversion: SI to traditional units—bilirubin: 1  $\mu\text{mol/l}$   $\approx$  0.058 mg/100 ml.

\*Student's *t* test, † $\chi^2$ , NS = not significant.

statistically significant difference between the two groups for either peak serum bilirubin, or the number of babies receiving phototherapy.

### Discussion

Hyperbilirubinaemia is common in breast-fed babies; the incidence may be as high as 25%.<sup>3</sup> Although the use of water supplementation with an aim of reducing the serum bilirubin concentrations in such babies is widespread, we did not have any clear evidence of its efficacy. This study failed to demonstrate that water supplementation in normal, term, breast-fed babies with physiological jaundice reduced serum bilirubin concentrations or the requirement for phototherapy compared with a control group.

As expected, babies who received water supplementation lost less weight, although the difference is not significant. The relationship between weight loss and neonatal jaundice is controversial<sup>1 3</sup>; our own figures suggest no correlation.

There are several potential hazards in the administration of unnecessary supplements to breast-fed babies.<sup>5 7</sup> The establishment of breast-feeding may be impaired because of the different suckling mechanism; the frequency of demand feeds may be reduced thus inhibiting the process of lactation; maternal confidence may be undermined leading to stopping breast feeding early.<sup>7</sup>

It is our feeling that in view of the possible detrimental effects of water supplementation to breast-fed babies this 'innocent' common practice requires further investigation.

### References

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