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Hospital Practice

WEIGHT GAIN AND MOVEMENT PATTERNS OF VERY LOW BIRTHWEIGHT BABIES NURSED ON LAMBSWOOL

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Summary 34 very low birthweight babies (mean 1143 g) in incubators were randomly assigned to be continuously nursed on lambswool (n = 17) or ordinary cotton sheets (n = 17). The weight gain for the periods when babies were well was significantly larger for the wool group, 22·7 g/day vs 18·6 g/day for cotton control ($p<0·02$). The overall weight gain (which included weight change during periods of illness) revealed a similar picture in favour of the wool group, 21·5 g/day vs 18·2 g/day ($p<0·05$). Movement patterns for the two groups showed no differences, but for all babies a strong correlation was noted between moving and lying supine ($p<0·001$), having eyes open ($p<0·001$), a cooler incubator ($p<0·01$), and faster weight gain ($p<0·01$). Lambswool seems to have advantages over cotton sheets as a bedding material for very low birth weight babies.

INTRODUCTION

OUR pilot study on the use of lambswool in special-care baby units suggested that very low birthweight babies (VLBW) gain weight faster and move less when nursed on lambswool instead of on cotton sheets.[1] However, the numbers involved were small, and each baby was alternated between wool and cotton several times, so the differences could have been due to withdrawal from wool—hence this study to find out whether there might be any benefit from continuous nursing on lambswool.

METHOD

Subjects

Babies were randomly assigned, by the drawing of envelopes, to either the experimental group (nursed on wool) or the control group (nursed on cotton). The wool group was split into two subsets, one nursed on lambswool woven into an artificial backing ('Lamb-Pads', Dermalex Co, London), the other on natural lambskins ('Winganna', Sandy Hill Enterprises, Haverfordwest, Dyfed, and 'Babycare', GL Bowron, Bristol). These wool products are specially designed for babies.

All the babies were in incubators at the Special Care Baby Unit, Cambridge Maternity Hospital, between October, 1980, and September, 1981. 36 babies were entered into the trial and randomised when they met the following criteria—(1) when they were no longer on artificial ventilation or intravenous therapy; (2) when they weighed less than 1425 g and were no more than 31 days old, and (3) when they had gained weight for two consecutive days.

They were withdrawn from the study when they died or when they needed artificial ventilation, which made accurate weighing and movement studies impossible. Two babies were withdrawn: 1 in the cotton group, who died from multisystem failure following

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necrotising enterocolitis, and 1 in the wool group, who needed artificial ventilation after an extensive intraventricular haemorrhage. This left 17 babies in each group, whose characteristics are shown in table I.

TABLE I—CHARACTERISTICS OF BABIES IN WOOL AND CONTROL GROUPS

	Wool (n = 17)		Control (n = 17)	
	Mean	Range	Mean	Range
Birthweight (g)	1167	600–1550	1118	647–1494
Weight at entry to				

[redacted]

Cambridge). Weight-gain data were classified according to the baby's health: (i) the "well" weight-gain for periods when the baby was well as defined above, and (ii) an "overall" gain for the total period of study. Some babies never had a well period; others were well only for some of the time.

Movement.—Each baby was observed for an hour five days a week by one of us (P. L.), who categorised the maximum movement made during each twenty second period on an 8-point rating scale, which has previously been validated and is described elsewhere.[1] The scale points can be multiplied by the amount of time spent in each to give a single decimal movement score for correlation use. Some other aspects of behaviour were also noted (whether the eyes were open or shut and frequency of smiles, grimaces, startles, twitches, and yawns), as well as position (prone or supine) and operative temperature (incubator temperature minus one degree for every

RESULTS

Weight Gain

Well babies (table II).—The wool group (n = 12) showed a mean gain of 22·7 g/day and the control group (n = 14) 18·6 g/day ($p<0·02$, two-tailed t test). Birth weight, entry weight, entry age, and sex had no effect on gain.

Overall gain (table III).—The wool group (n = 17) showed a mean gain of 21·5 g/day and the control group (n = 17) 18·2 g/day ($p<0·05$, two-tailed t test). Birth weight, entry weight, entry age, and sex had no effect on gain.

There was no significant difference in weight gain between

Health

The two groups did not differ significantly in the proportion of days during which the babies were well (wool group 51% *vs* 63% control group). No untoward effects from being nursed on lambswool were observed. In particular, no baby was found with wool fibres in its mouth or up its nostrils.[5,6] No mother expressed dissatisfaction about her baby being nursed on lambswool; several in the control group asked why their babies were not on it.

Movement

There were no significant differences in amount of

infants similar to that seen with swaddling.[7] Our results would be compatible with the idea that babies nursed on cotton undergo more stress than when they are nursed on lambswool, but other interpretations are possible. Illness reduced the rate of gain for all babies and diminished the extra gain on wool.

The similarity of movement patterns in the two groups does not confirm our earlier finding[1] of decreased movement with wool. The differences found during our pilot study could have been due to its on/off design, which caused short-term differences in movement as the babies reacted to the change. Certainly many mothers of babies in the earlier study had the impression that movement increased markedly on the days the wool was taken away.

The general association of movement with supine position,[8,9] a cold environment,[10] and eye opening[11] is in agreement with other studies, but we are not aware that the association with weight gain has been reported before.

We have had some experience in the unit with artificial fibre, in the form of imitation wool mats. They are altogether different from the wool in being slippery and causing the skin of babies lying on them to become damp because they do not absorb moisture. They also shed a lot of loose fibres and are not suitable for nursery use. We also caution against the use of any wool products not specifically designed for use with babies.

The implications of using lambswool are important. Apart from promoting faster growth (and hence presumably better health), it allows earlier discharge from hospital, thus releasing cot space for others and reducing the disruptive effect that hospital admission has on parents' ability to develop a satisfying relationship with their babies.[12]

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Round the World

From our Correspondents

Sudan

DEVELOPING A LABORATORY SERVICE IN A NEW AFRICAN MEDICAL SCHOOL

Juba in the southern Sudan is the home of the newest medical school in Africa. The medical school has been established not by the building of a major modern hospital but by the gradual transformation of the regional hospital, built mainly in the 1940s.[1] The development of the laboratory service has been one small component in that metamorphosis.

The laboratory is housed in a converted ward and is staffed by three recently trained technicians and twenty laboratory assistants. In 1981 the diagnostic facilities available were measurement of haemoglobin and erythrocyte sedimentation rate, blood films, microscopy, and culture of stool and urine. White-cell counts were done occasionally and differential counts very rarely. No records are available from this period, since each request was completed by any of the laboratory assistants and the result returned unrecorded to the ward. Verification of results was impossible; medical staff lost faith in the results, requested few tests, and did not act on results they did receive.

The blood transfusion service also operates from the laboratory. Blood storage facilities consist of one domestic refrigerator, which also stores other reagents and culture plates to be used in the laboratory. Therefore, no blood is stored for longer than 48 h, and even the small amount stored has to be discarded when the special generator for this fridge fails overnight, as happens once or twice a month. In addition, the water supply fails one or two days a week. Supplies for tests come only when fetched by a member of staff from the regional store, for simple stains and diluting fluids, or from Khartoum, for grouping sera. There was, and is, no ordering system for any reagents not available in the country since there is a severe shortage of hard currency in the Sudan. Even local currency is limited since the Regional Ministry of Health budget scarcely covers its staff's salaries.

From this starting point, and given the considerable financial constraints, what is the goal for the laboratory? What is needed is a reliable service in a selected range of tests suited to meet both the clinical needs and the financial budget. To attain that goal certain intermediate aims can be outlined. First, to do efficiently those tests that are already being done in a haphazard way. Secondly, to discover and implement other tests that can be done with unused staff skills and available reagents. Thirdly, to determine what new methods need to be established to attain the minimum level of facilities that is essential in a developing teaching hospital.

The first area in which changes had to occur was in the administration of the laboratory service. The concept of efficiency is alien to many of us, but especially so to the indigenous staff whose primary orientation is towards personal relationships within the web of the family, clan, and tribe. Such simple measures as registration of specimens, allocation of work, personal responsibility for tests carried out, and, above all, reliable attendance were fundamental to the initial development of the laboratory. Lapses in attendance are most frequently due to family funerals, personal sickness, and follow-up of pay claims at the Ministry of Health. Despite progress in this area, assisted particularly by the appointment of a Sudanese medical officer in charge of the laboratory, efficiency is continually handicapped by failure of the support services, of electricity, water, and essential supplies, such as immersion oil and cover slips. Also, an after-hours emergency service has been difficult to maintain. This difficulty reflects the lack of implementation of disciplinary measures to ensure staff attendance, which pertains in many working environments in the region.

Once the staff had begun to work with great reliability, it was

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