

leukæmia (preleukæmia, smouldering leukæmia, or refractory anæmia with excess of myeloblasts), idiopathic thrombocytopenic purpura (I.T.P.), acute promyelocytic leukæmia, and aplastic anæmia.⁸ Most marked pseudopod formation ($P < 0.01$) was observed in, unexpectedly, late pregnancy, I.T.P., pernicious anæmia, after heart-valve replacement, and in paroxysmal nocturnal hæmoglobinuria. On the other hand, platelet shape was almost normal in diabetes mellitus and in chronic thrombotic diseases (leg varices, thrombophlebitis, aortitis syndrome).

Strong spherification generally coincided with significant pseudopod formation but not in pregnancy. Platelet shape returned almost to normal around a month after delivery, a feature which differs from in-vitro observations on platelet activation by A.D.P./thrombin (unpublished).

The mechanism for these shape changes in various clinical conditions is not yet known. However, platelet shape may prove to be a very sensitive index to activation in vivo and/or for assessment of the response of thromboembolic disease to treatment. Platelet shape is now evaluated in relation to circulating platelet aggregates, platelet size, β -thromboglobulin, and/or platelet function.

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NURSING LOW-BIRTHWEIGHT BABIES ON LAMBSWOOL

SIR,—At the special-care baby unit of The Cambridge Maternity Hospital we have started to investigate the effect of nursing low-birthweight babies on lambswool whilst they are in incubators. Work by M. Powley, of the department of psychology, University of Dunedin, suggested that when lambswool was substituted for cotton bedding, babies in incubators made fewer movements (unpublished).

We studied six symptom-free babies (three male, three female) from a mean age of 27 days and body-weight of 1369 g up to the time they attained a weight of 1.7 kg, a period of 8–16 days, after which they were transferred to a cot. Each baby served as its own control: it was put on lambswool for 24 h alternating with cotton for 24 h. Every baby had at least 4 days on each type of bedding, the order being randomised.

The bedding was changed at the same time each evening and the baby was left to settle on it overnight. Movements were noted the next

RESULTS

—	On cotton	On lambswool	Mean (and S.E.) of difference	P†
Weight gain (g/day)	19.6	31.5	11.9 (5.8)	<0.05
Movement (min/h)*				
Minimal	49.4	52.4	3.0 (1.18)	<0.05
Moderate	9.00	6.46	2.54 (1.06)	<0.05
Vigorous	1.60	1.14	0.46 (0.37)	N.S.

*Raw data from the 90 min observation periods have been multiplied by 2/3.

†t test.

morning for 90 min and again in the evening, after which the nurses weighed the baby before the bedding was changed. The mats were 'Lamb-Pads' (Dermalex) consisting of 22 mm of lambswool woven into a synthetic backing so they could be laundered. Tests by the bacteriology department showed this to be a safe procedure. Before they were first used, the mats were washed to eliminate any loose fibres. The babies wore a waterproof napkin only and were alternated between supine and prone positions 3-hourly.

An observer (S.S.) used a rating-scale which was condensed to give three categories of movement—"minimal" (no movement other than

quiet respiration or slight peripheral movements, of the lips or fingers, for example); "moderate" (slow-to-moderate movement of one or more limbs or trunk); or "vigorous" (fast, vigorous movement of one or more limbs or trunk). During observation sessions the highest rating-point of movement seen over each 20 s period was recorded for 90 min. At the end of the session the number of 20 s periods in each category was added up, thus giving a measure of the total time spent executing movements in that category. Mechanical recording was later added to give a more objective measure and to allow occasional 24 h monitoring. An apnoea alarm mattress with signal amplification was connected to a pen recorder so the pen deflection gave an index of movement. The visual and mechanical methods corresponded very closely; because the mechanical recorder was unavailable at the beginning of the experiment the results (see table) refer to observer ratings only.

Incubator temperature, room temperature, and baby temperature showed no difference under the two conditions; the feeding schedule was the same, as was the frequency of bowel movement. 24 h recording by machine revealed that the same activity level differences were maintained throughout the daily cycle and were no greater at observation time.

Possible explanations for the striking improvement in weight gain (more than 10 g a day extra) and reduction in activity might include:

Reduced oxygen consumption (due to reduced movement).—If O_2 consumption rises 5 ml/kg/min during exertion which is reduced by 1 h/day (see table), with conversion factors of 0.005 kcal/ml O_2 and 0.25 g/kcal, the saving would be slightly less than 1 g/day.

Reduced radiant-heat loss due to (a) less skin area uncovered at rest or (b) less time spent moving, when heat loss is greater.—Estimates: (a) if the lambswool covers 15% more body area than the sheet and allows no radiant heat loss, in a typical baby losing 7 kcal/m²/h with a surface area of 0.25 m² the saving would be 1.3 g/day; (b) if heat loss increases by 10 kcal/m²/h during exertion and this is reduced by 1 h/day, the saving would be 1.2 g/day. Whilst the heat-loss savings could in theory account for a little (2.5 g) of the extra weight gain, the explanation may not be valid since at the mean temperatures used, 33.5°C incubator and 27.1°C room, babies of this weight are in their thermally neutral zone¹ where a reduction in heat loss is not necessarily associated with less energy expenditure. Therefore any weight change not accounted for this way will require other explanation.

Texture.—Animal studies indicate that texture alone can play a profound role in putting stress on the newborn; by increasing output of hormones which raise metabolic rate, such as thyroxine and catecholamines, the stress may have an effect on weight gain. In Harlow's² classical experiments with rhesus monkeys, when the material out of which the surrogate mother was made was changed from "terry-towelling" to wire mesh, the time spent clinging to the "mother" was drastically reduced and all the baby's exploratory play behaviour was abolished. Human babies might also be powerfully affected by texture and show similar predispositions at an age when tactile stimuli are influential. Current hospital practice may thus be unwittingly placing stress on the newborn.

Further research is being set up with a larger number of babies kept continuously on lambswool.

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