

A CASE OF SEVERE ANÆMIA IN A NEW-BORN INFANT

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Slight degrees of anæmia in the new-born, with or without jaundice, are common enough, but cases of the degree of severity at all comparable to the one we are about to describe, are extremely rare. We have been able to discover in the literature records of investigations of only fifteen cases which deserve to be classified in this category, although fourteen other cases have been observed but not described (Grulee¹¹, Foote⁸, McClelland¹³, Blackfan, Baty and Diamond²). All the cases in the literature are, we believe, included in the accompanying table, with the exception of four of massive hæmorrhage into the supra-renal capsules, published by D. P. Arnold¹. These latter cases do not contain sufficient details with respect to the blood conditions to be included in the list.

The cause of the anæmia in most, if not in all, of these cases is uncertain. It may be concluded from their histories that they were all examples of secondary anæmia, for the reason that the symptoms came on a few days after birth—i.e., from the third to the seventh day, the common period of neonatal hæmorrhages,—and rapidly disappeared, either spontaneously or after simple treatment. Such results hardly could have occurred had they been due to defects in the hæmopoietic mechanisms. On the other hand, it is difficult to conceive how the site of an internal hæmorrhage sufficiently large to account for the symptoms could fail to be recognized.

In our own case we suspected a hæmorrhage into the left suprarenal gland for two reasons. First, a somewhat indefinite swelling could be felt in the position of this organ, but its presence could not be confirmed by X-ray examination, made when the infant was one month old. Secondly, the rather startling symptoms corresponded very closely with those recorded by Arnold¹ in new-born infants in four examples of massive hæmorrhage into the supra-renal capsules, two of which were confirmed by post-mortem examination. If our conclusions are correct, it is possible that similar hæmorrhages may have occurred in some of the other cases recorded without attracting attention. The striking similarity of the blood picture in these cases of anæmia in the new-born to that of an acute post-hæmorrhagic anæmia, has been noted by Pasachoff and Wilson¹⁴, although post-mortem examination in their case showed no gross hæmorrhage. Foote⁸ has suggested that an occult hæmorrhage in combination with an insufficient reserve of iron may be of ætiological importance.

TABLE SHOWING 12 CASES OF SEVERE ANÆMIA IN NEW-BORN INFANTS.

Author	Age	Red cells	Abnormal red cells	Hb. %	C.I.	White cells	Polymorpho-nuclears	Lympho-cytes	Platelets	Remarks—course of treatment.
1. Pritchard and Smith	10th day	750,000	—	10	0.67	74,000	35	62	—	Normal fragility: Van den Bergh indirect +; 2 blood transfusions: 35 and 25 c.cm. Van den Bergh indirect +, but weaker.
	13th "	1,900,000	Marked aniso- and poikilocytosis. Many more nucleated reds than in previous test.	20	0.53	42,000	30	64	—	
	17th "	2,250,000		36	0.8	—	13	66	—	Indirect Van den Bergh weak +.
	23rd "	3,200,000	Immature forms much less frequent.	47	0.74	9,500	30	62	—	Van den Bergh —
	28th "	3,700,000	Few immature cells present.	58	0.78	8,700	32	66	—	Still rather pale; doing well. Weight 6 lb. 15 oz.
	35th "	4,200,000	Few immature cells present.	60	0.71	7,700	—	—	—	Cheeks pink. Weight 7 lb. 11 oz.
2. Ecklin ⁶	12th day	2,500,000	Anisocytosis, poikilocytosis, basophilic, erythroblasts.	32	0.64	40,000	30.6	57.8	—	No special treatment. Blood picture normal by 7th month.
3. Donnelly ⁸	20th day	918,000	—	20	1.0	29,200	55	42	—	Transfused with 100 c.cm. citrated blood into sinus.
	24th "	—	—	45	—	—	—	—	—	2nd transfusion 70 c.cm.
	28th "	—	—	35	—	—	—	—	—	Normal blood picture at 6 months.
4. Sanford ¹⁰	1 hour	2,500,000	—	48	—	68,400	60	35	Normal	No special treatment.
	9th day	2,900,000	—	78	—	11,000	—	—	—	—
	30th "	3,720,000	—	80	—	—	—	—	—	—
5. Bomar ³	13th day	1,200,000	Aniso- and poikilocytosis	31	1.3	18,000	54	43	—	No special treatment.
	3 weeks	1,450,000	—	23	—	6,000	—	—	—	—
	1 year	4,460,000	—	90	—	9,700	—	—	—	—

6. Stillbury ⁶	14th day	800,000	—	10	—	28,000	46	—	—	Two transfusions—150 c.cm., blood then rose to an Hb. 44%, and red cells 2,400,000. One week later 2nd transfusion 160 c.cm. Hb. 40%, red cells 2,600,000. Wonderful recovery.
7. Canino ⁴	12th day	2,500,000	Erythroblasts megalo- blasts, aniso- and poi- kilo-cytosis.	45	0.9	14,500	42	33	—	No treatment.
8. Ehrmann ⁷	5th day	1,228,000	—	28	1.2	20,550	36	56	—	Slightly increased fragility of red cells.
	10th day	1,776,000	Marked polychromasia.	35	—	20,300	—	—	—	Hemolysis began at 0.6%, completed at 0.44%. 60 c.cm. blood intraperiton- eally on 7th day. 100 c.cm. on 12th day. Normal blood count at 7 months.
9. Happia	14th day	1,088,000	Aniso- and poikilo-cytosis	40	—	11,200	30	50	Normal	On 17th, 20th and 34th day, intraperitoneal blood trans- fusions given. Ferrum re- ductum given in milk. At 12 weeks liver and broth added to milk diet. Infant normal at 17 weeks.
	16th	1,592,000	Moderate polychromasia	33	—	10,900	30	67	—	
	4 weeks	3,771,000	No abnormal cells.	62	—	6,200	31	59	—	
	8	3,376,000	—	55	—	10,900	44.5	53.5	—	
	12	3,672,000	—	56	—	9,200	26	70	—	
	17	4,808,000	—	74	—	—	—	—	—	
	30	4,672,000	—	78	—	13,900	25	70	—	
10. Greenhalgh ¹⁰	1st day	1,780,000	Moderate anisocytosis, few nucleated red cells.	48	1.3	17,000	76	18	—	3rd day 100 c.cm. whole blood (father's) given.
	4th	4,150,000	—	80	1.0	9,400	74	25	320,000	—
	6th	5,370,000	—	90	—	—	—	—	—	—
	4 months	4,500,000	—	—	—	—	—	—	—	—
11. Gibson and Sappington ⁸	7 days	2,300,000	Slight aniso- and poikilo- cytosis polychromato- philia.	42	—	12,400	56	41	—	Three transfusions.
12. Paschhoff and Wilson ¹²	5th day	300,000	Slight aniso- and poikilo- cytosis, occasional nor- moblasts.	8	1.0	10,800	24	53	242,000	Death before transfusions given.

Clinical report.

The following is a short account of our case :—

R. B. male, was born on June 10th, 1931. The mother, a rather delicate woman, had two other children, aged respectively four and one-and-a-half years. She had been examined during pregnancy at the ante-natal clinic at Queen Charlotte's Maternity Hospital, and she was attended at her own home by a midwife from this hospital under the supervision of the district Medical Officer, Dr. Florence Parsons. The infant, who at birth weighed $5\frac{1}{2}$ lb., was noticed to be slightly jaundiced on the second day, but gave no cause for anxiety till the 7th day, when he was observed to be somewhat pale. The pallor increased rapidly during the 8th and 9th days, and it became so extreme by the 10th day that he was sent by Dr. Parsons to the Infants Hospital.

On admission, the infant was regarded as being in extremis, the pulse was 130 and extremely small. Respirations were 90, and of a gasping character. The temperature as recorded by a sub-normal thermometer, was below 90° F. The skin was absolutely colourless, and the mucous membrane of the lips a pale straw colour. The spleen was just palpable below the ribs, and the abdominal veins were slightly distended. Within a quarter of an hour of admission, the child's blood was grouped and 35 c.cm. of blood transfused into the longitudinal sinus. Owing to his collapsed condition, it was considered inadvisable to give the full amount for his age, namely, 10 c.cm. per pound weight, so only the above quantity of citrated blood was given at the first transfusion, but it was followed 5 hours later by another injection of 25 c.cm. The condition next morning had greatly improved, respirations had fallen to 50, and the temperature was normal. On the 14th day, the mother was admitted to hospital and from that time forward the child was breast-fed. Apart from these transfusions the only treatment given to the infant was the daily administration of small doses of extract of red-marrow, while iron and arsenic were given to the mother to raise the iron-content of her milk. The blood count which on admission showed only 750,000 red cells and a hæmoglobin percentage of 10, rapidly improved. Three days later the red cells were 1,900,000 in number and the hæmoglobin 20 per cent. Further details of progress are given in the table.

Note.—It is remarkable that in a case of such extreme anæmia, almost certainly due to internal hæmorrhage, there was not more definite evidence to point to the seat of the hæmorrhage. The rapidity of recovery was remarkable, and there can be little doubt that the infant would have died had not treatment by blood-transfusion been promptly carried out. Recovery was possibly accelerated by the presence of a depot of blood-clot due to an internal hæmorrhage, which served as material for hæmatopoiesis, and in this connection it is interesting to note that the X-ray film of the thorax showed enlargement of the costal epiphyses, suggestive of activity of the bone marrow in these situations.

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