finger when the word "tap" was shown on the screen. She could not vocalize the word. Indeed, her left hemisphere had no idea what her left hand was up to in the dark but some excitement had communicated itself, and she said "I'm doing it, Doc. What am I doing?" The interhemispheric transfer of emotional reactions, incidentally, persists in spite of section of the forebrain commissures; thus when erotic pictures are exposed to the right hemisphere, the verbal hemisphere is excited, too, but cannot relate why.

PERCEPTION OF WRITTEN LANGUAGE

In addition to its visuospatial accomplishments, then, the right hemisphere can perceive written language and even act upon it in certain circumstances. If this reflects abilities which are normally held in check by the opposite hemisphere, as our hypothesis predicted, it has a bearing on the prognosis for patients whose aphasia is caused by left-sided lesions. Nevertheless, the results may be interpreted in another way. These patients presented in the first instance with epilepsy, and the associated brain damage may have resulted in an atypical, bilateral distribution of cerebral functions. There is evidence that epileptic lesions in rats result in a reorganization of cerebral function, profoundly modifying the effects of subsequent cortical ablations. The bilateral representation of language in patients with bisection of the brain has not been observed in otherwise healthy individuals in whom the commissural pathways have been traumatically interrupted. Thus, while brain bisection presents a most elegant opportunity to study differences between left and right hemispheres clearly we can extrapolate the findings only with caution.

The phenomenology of perception has been the subject of intensive investigation by psychophysicists and psychologists ever since the emergence of their subject more than a hundred years ago. To the early gestalt psychologist the problems were largely solved by envisaging a representation of the outside

world on the substance of the brain. We now know a great deal about the almost point-to-point representation of receptor fields upon the projection cortex. But clearly the interpretive processes only begin here and we must look to the association cortex to discover the highest levels of perceptual analysis. Our opportunities to gain insight into this system are rare, and more often as a result of malfunction than as chances to observe the system working normally. We are at present attempting to interpret the electrical activity of the normal brain as it appears in the electroencephalogram in terms of perceptual processes in the underlying cerebral cortex. We can already use these techniques to distinguish both the semantic specialisation of the left hemisphere and visuospatial activity in the right.^{13 14}

We hope that techniques like these will enable us to gain further insight into the organization of the brain for perceptual processes.

References

- ¹ Lashley, K. S., *Brain mechanisms and intelligence*, Chicago, University of Chicago Press, 1929.
- ² Mishkin, M., *Visual mechanisms beyond the striate cortex* in *Frontiers in Physiological Psychology*, ed. R. W. Russell, New York, Academic Press, 1967.
- ³ Brindley, G. S., and Lewin, W. S., *Journal of Physiology*, 1968, 196, 479.
- ⁴ Penfield, W., *Science*, 1959, 129, 1719.
- ⁵ Aides, H. W., *Journal of Neuropathology and Experimental Neurology*, 1946, 5, 60.
- ⁶ Benson, D. F., and Geschwind, N., in *Handbook of Clinical Neurology*, ed. P. J. Vinken and G. W. Bruyn, Vol. 4. Amsterdam, North Holland Publishing Co., 1969.
- ⁷ Semmes, J., *Neuropsychologia*, 1968, 6, 11.
- ⁸ Critchley, M., *The Parietal Lobes*. London, Arnold, 1966.
- ⁹ Bogen, J. E., and Gordon, H. W., *Nature*, 1971, 230, 254.
- ¹⁰ Gazzaniga, M. S., Bogen, J. E., and Sperry, R. W., *Brain*, 1965, 88, 221.
- ¹¹ Sperry, R. W., and Gazzaniga, M. S., in *Brain Mechanisms Underlying Speech and Language*, ed. F. L. Darley, p. 108. New York, Grune and Stratton, 1966.
- ¹² Butler, S. R., and Norrisell, U., *Nature*, 1968, 220, 793.
- ¹³ Butler, S. R., and Glass, A., *Electroencephalography and Clinical Neurophysiology*, 1971, 30, 366.
- ¹⁴ Vella, E. J., Butler, S. R., and Glass, A., "Nature," in the press.

Problems of the Newborn

Less Urgent Problems and Minor Abnormalities

DAVID G. VULLIAMY

British Medical Journal, 1971, 4, 547-551

Relatively trivial disorders of the newborn infant may be magnified in a mother's mind to cause intense worry and suffering, which often remain unvoiced unless the opportunity is given. Only recently I had to spend some time assuring and reassuring one mother that the minimal webbing of her baby's second and third toes would not cause him to be a permanent cripple. Even when no abnormality is visible there may be an irrational feeling of apprehension about the baby—especially if there is a family history of some disorder in a previous child. Hence the value of carrying out the full neonatal examination

in the mother's presence, so that she may express any doubts or fears and so that any disorder which is found may be put in its right proportion.

In the first few weeks of life the newborn infant continues a process of adjustment to independent existence, which began abruptly at the moment of birth. Some of the problems of this period are due to this incomplete adaptation to the new environment.

The Skin

COLOUR CHANGES AND RASHES

Cyanosis of the hands and feet is often visible in the first few days owing to sluggish peripheral circulation in the skin. It need not signify any abnormality, but since peripheral cyanosis

Dorset County Hospital, Dorchester
DAVID G. VULLIAMY, M.D., F.R.C.P., Consultant Paediatrician

can also be a sign of body cooling (for example, after bathing or other exposure) it should not be entirely ignored when persistent, and the rectal temperature should be checked.

Ecchymoses or multiple minute petechial spots in the skin of the face may result from congestion of the head during labour. This may even give the impression of cyanosis until examined more closely and be extremely worrying to the mother. The baby is usually completely unaffected by it. Quite severe bruising and swelling of the skin may occur over other presenting parts—for instance, the vulva in breech presentation. Again the appearances are more alarming than they seem.

Scaling or peeling can be quite normal when it takes place after two or three days, but if present at birth it usually indicates intrauterine malnutrition or an excessive prolongation of pregnancy (Fig. 1). "Scalding" of the skin of the side of the

FIG. 1—Scaling skin in a baby with intra-uterine malnutrition.

FIG. 2—Vomit scalding.

face from regurgitation of the highly acid gastric juice in the first week may sometimes be mistaken for an infection, but it always clears and heals spontaneously (Fig. 2).

The multiple tiny raised white spots commonly seen on the face (especially the nose) are really hyperplastic sebaceous glands, sometimes called milia, and disappear within the month.

Erythema toxicum or urticaria neonatorum arises about the second to fourth day as an eruption of blotchy red patches mainly over the trunk, face, and buttocks, superimposed on which there are small white raised spots looking like pustules. These contain no pus, however, and if examined microscopically

are found to be filled with eosinophil cells. The rash is thought to be allergic in origin and invariably resolves within a few days without treatment.

BIRTH MARKS

About one-third of all newborn babies have something visible in the way of bluish-red staining of the skin on the nape of the neck and usually the forehead just above the nose or on eyelids or upper lip. Familiarly known as "stork marks," these lesions are due to localized dilatation of superficial blood vessels and almost always fade within the first year—so the anxious mother may safely be reassured. This naevus has to be clearly distinguished from the relatively rare naevus flammeus, or "port-wine stain," which is usually situated over one side of the face and has a much deeper reddish-purple and thicker appearance; here there is no chance of spontaneous resolution.

The so-called "strawberry naevus" (naevus vasculosus) is not strictly a naevus at all because it is hardly ever present at birth. Relatively common in those babies born before 37 weeks of gestation, the lesion begins as a tiny bright red raised spot at about the second or third week and may be sited anywhere. The spot enlarges and the surface becomes slightly irregular and mottled, sometimes with thickening of the surrounding area more deeply. Typically, it grows for a limited period of 3-6 months and then remains static for a time, after which there is very gradual regression and resolution which takes 8-10 years to complete. "Masterly inactivity" is therefore the usual recommendation, though if the lesion is in an awkward place (for example, around the eye) there is surely a case for destroying it surgically while still less than 5 mm in size.

Pigmented naevi

The common slate grey area of pigmentation sometimes called "Oriental or Mongolian blue patch" over the lumbosacral area in dark-skinned people is occasionally mistaken for a bruise. It is of no serious significance and does not necessarily imply an oriental ancestry; fading takes place gradually within a year or two. Much more of a worry is the rarer giant pigmented naevus, which usually covers the bathing trunk area or the lumbosacral region of the back; this naevus is inclined to increase in thickness and depth of colour, sometimes with growth of hair, and may require plastic surgery in later childhood.

Head and Neck

After moulding and other pressure effects have subsided there is still a big variation in the normal width of suture lines and the size of the fontanelles. The anterior fontanelle varies from a diamond-shaped depression just admitting the tip of the forefinger to an area 5 cm or so across, continuous with suture lines in which a 0.5 cm gap may be felt. The tension of the fontanelles is thus more clinically informative than their size. Head circumference is routinely measured soon after birth and at full term is 33-38 cm (13-14½ in) in 95% of babies. Anything more than this upper limit, especially if associated with some fullness of the fontanelle, should give rise to a suspicion of hydrocephalus. Equally, an increase of head circumference of more than 2.5 cm (1 in) in the first two weeks is unlikely to be normal.

ASYMMETRY

Asymmetry of the head is usually only slight at birth, but the very common "plagiocephaly" or "parallelogram skull"

FIG. 3—Plagiocephaly.

develops gradually in the first month or two (Fig. 3.) It is of postural origin and inquiry shows that the baby has a preference for turning the head mainly toward one or other side when laid down. Though this deformity can become very obvious and a worry to parents, it always straightens eventually, starting from the time when the baby begins to spend less time lying horizontally and more time upright.

CEPHALHAEMATOMA

Even after a perfectly normal birth it is common to see this localized rounded swelling over one side of the head (Fig. 4), becoming maximal in size by the third or fourth day of life. It is a soft, non-translucent swelling, whose limits are those of one of the cranial bones (usually a parietal bone) and the haemorrhage has occurred beneath the pericranium. A ridge of reaped up pericranium may be felt around the edge of the haematoma, which can give a false impression that the bone is depressed centrally. No treatment is necessary and resolution takes place in a matter of 3-4 weeks in nearly every case. Some-

FIG. 4—Cephalhaematoma.

times, when the haematoma is very large, the increased haemolysis results in some increase or prolongation of neonatal jaundice. There is no association with intracranial bleeding.

Eyes

Adequate examination of the eye is difficult at this period and thus tends to be omitted. Attempts to force open the eyelids with the fingers are fruitless if the baby resists, but as soon as he starts to suck from a teat the muscles relax and the eyes either open or at least the muscles become relaxed enough to make retraction of the lids successful. Subconjunctival haemorrhage shows either as a flame-shaped reddening spreading outward from the cornea or a red ring concentrically around it. Neither type gives rise to any ill effects and again resolution without treatment is the rule.

INFECTIONS

The so-called "sticky-eye," usually caused by staphylococcal infection but occasionally by *Escherichia coli* and showing itself as a rather scanty purulent discharge, usually starts about the third to fifth day of life, and responds well to local treatment with an appropriate antibiotic eye ointment (often chloramphenicol). A sticky eye of earlier onset than this often proves sterile on culture and clears without treatment within 48 hours. Gonococcal ophthalmia, which for many years was rare enough almost to forget, has lately been seen more often again and the diagnosis must therefore be borne in mind. Dacrocystitis causes a swelling at the inner corner of the eye, from which pus can usually be expressed through the lacrimal duct, and this procedure together with local antibiotic ointment and saline irrigation forms the treatment.

Mouth

Cleft lip and palate, one of the commoner serious congenital malformations (1 in 1,000 births), tends to cause a disproportionate amount of maternal anxiety, naturally enough. Initial fears that feeding will be a terrible struggle can be allayed by a demonstration of how the baby can take the milk well from a soft teat with a much enlarged hole or over the tongue from a specially prepared spoon with bent-in sides to form a sort of spout. Anxiety about the child's future appearance may perhaps best be dealt with by showing a photograph of the final results of modern plastic surgery on another patient, compared with the untreated condition.

"Tongue-tie," a short and sometimes thickened frenulum attached more than usually anteriorly to the base of the tongue, is a common source of anxiety to mothers, who fear future speech difficulties or feeding problems. Exceptionally, when there is restriction of tongue protrusion beyond the alveolar margins or heavy grooving of the tip of the tongue, it is reasonable to advise surgical division of the frenulum in the second or third month of life; in the great majority of cases, however, no treatment is necessary and a firm assurance may be given that there will be no handicap.

Early eruption of teeth before birth happens once in about 4,000 births. The precocious tooth is generally loose and finds its own way out eventually. Extraction is rarely necessary.

The sternomastoid swelling, a palpable thickening in the middle third of one sternomastoid muscle which is first noticeable some weeks after birth, is occasionally mistaken for a swollen lymph node. If it can be shown to be located in the muscle by noticing that it stands out when the muscle contracts and cannot be moved independently from it, then the diagnosis is clear. Very often it also causes temporary torticollis, with rotation of the head away from the affected side and tilting

towards that side. Histologically, avascular necrosis of a section of the muscle has been shown to be the cause rather than a haemorrhage into the muscle substance, as was once thought. No treatment is necessary and 90% gradually disappear leaving no residual asymmetry. Rarely, if torticollis becomes more severe or fails to improve after 1 year of age, surgical release of the contracted sternomastoid may have to be considered.

Heart, Lungs, and Chest

Costal recession on inspiration is a feature of almost any case of respiratory distress regardless of the cause—especially in the pre-term baby with his soft thoracic wall and active diaphragm. It becomes very definite whenever any condition results in “stiffening” of the lungs and is thus one clinical sign worth remembering of congenital heart disease where there is a left to right shunt of blood to produce the increase of pulmonary blood flow.

Heart murmurs are sometimes misleading signs, for a soft systolic murmur is commonly audible in the first week in the normal baby. Where anoxaemia prevails for any reason the ductus arteriosus often remains patent and a temporary murmur may also arise from this source. Conversely, the murmurs of some congenital heart anomalies do not become noticeable until several days have passed, and suspicion of the diagnosis should be raised by other signs such as respiratory difficulty without a pulmonary cause, combined with enlargement of the liver and possibly cyanosis.

Neonatal breast engorgement (Fig. 5), the result of the sudden withdrawal of certain maternal endocrine secretions, is common in both baby boys and girls; unless complicated by

FIG. 5—Neonatal breast engorgement.

true mastitis of infective origin, nothing need be done, but it is as well to know that the condition may sometimes persist even up to 6 months or a year of age.

Alimentary Tract and Abdomen

Vomiting is frequently a source of some worry in the first week or two and though the serious causes of this symptom like congenital intestinal atresia will not be discussed here, some of the more trivial causes are worth mentioning.

“Possetting” of a mouthful or so of milk soon after feeding is of course entirely normal. The vomiting of bile is always a

danger signal at this age and probably means high intestinal obstruction (for example, duodenal atresia). Otherwise, there are many different possibilities. Thus infection somewhere (for example, the urinary tract) ought always to be sought, and in this case there is associated food refusal, a general muscular floppiness, and pallor. Vomiting is also a feature of cerebral irritation or a rise of intracranial pressure, of which there will be other signs.

Most commonly when the more serious causes seem unlikely, vomiting is found to be attributable to a bad feeding technique, or to what is assumed to be pyloric spasm resulting from irritation of the gastric mucosa by material swallowed at birth. Whatever the true cause may be, the latter is often cured by a single gastric washout followed by a feed or two of water and sugar.

Blood with the stools is sometimes due to serious haemorrhage from the intestinal tract, but a few streaks of bright red blood arise from an excoriated rectal mucosa and usually follow a change from breast to bottle feeding. Altered blood, with meconium on the second day, frequently has a maternal source, having been swallowed by the baby during delivery, and a simple laboratory test can distinguish it.

THE UMBILICUS

An umbilical hernia is most often seen in the pre-term baby and needs no treatment. More rarely the herniation arises from just above the true navel and in such cases surgical intervention may be required at a much later stage. The “cutis navel,” in which the abdominal skin is reflected to cover the proximal $\frac{1}{2}$ -1 in of cord is a normal variation and gradually flattens after separation of the cord stump.

An umbilical polyp (Fig. 6), which is a mesenteric duct remnant and therefore consists of alimentary tract material,

FIG. 6—Umbilical polyp (Vitelline duct remnant).

must be clearly distinguished from the much commoner umbilical granuloma. The latter is simply a heaping up of excessive granulation tissue after delayed healing of the stump and may be treated by sparing application of a silver nitrate stick. The polyp, which has a red smooth shiny surface, requires more careful surgical attention.

Genitourinary Tract

Both kidneys are normally palpable with a little practice in most newborn infants, so enlargement or congenital absence of a kidney should be detectable.

The testicles are either completely descended or can be easily drawn down as far as the upper part of the scrotum in about 97% of full-term infants, though the percentage is less when the baby's gestation period has been cut short. Many of those which are found at the exit of the inguinal canal descend normally in the first year, but a few, which are generally distinguishable by the fact that they are ectopically placed, will never come down without surgical intervention.

Congenital hydrocoele—giving rise to a translucent swelling surrounding the testicle—is a frequent finding and over 90% of them disappear spontaneously in the first three months.

It is perhaps hardly necessary to mention the fact that the foreskin is normally "tight" in the newborn infant and not retractable. Provided a good stream of urine flows, all is well.

Urine is secreted and passed in utero during the latter half of pregnancy, and sometimes the baby passes urine during delivery, when it may go unnoticed. After birth it is unusual for a baby not to urinate in the first 24 hours and exceptional for urine to be withheld past 48 hours. But serious causes for delayed passage of urine are extremely uncommon and are nearly always accompanied by other grossly abnormal physical signs—as in the

case of renal agenesis. Continuous dribbling of urine, however, should lead to the suspicion of ectopic ureters (again an extreme rarity).

Brownish-pink coloured urine may stain the napkin and cause alarm about possible bleeding, but in the first week this is almost certain to be due to a heavy deposit of urates, which is of no serious significance.

This is not, of course, anything like a comprehensive account of all the minor disorders of the first month. But it may serve as a reminder that, though usually not upsetting to the baby, they may sometimes be of considerable gravity in the maternal imagination—and even occasionally in that of her medical attendant.

Colleagues in Health Care

The Home Nurse

FROM A SPECIAL CORRESPONDENT

British Medical Journal, 1971, 4, 551-552

Fifty years ago, the editor of the *British Journal of Nursing* wondered whether nurses on the newly-established State Register could be induced to accept posts in rural districts because of the isolation, the poor remuneration, and the element of patronage involved in lay control. Today, communications have removed isolation, salaries have risen steadily, and since 1965 the Queen's Institute of District Nursing has discontinued the training which it had supervised from 1925, and all home nurses are now employed by the local authorities, many of which now offer training courses.

The Queen's Institute gave district nursing a tradition and a name of which its trainees were proud. "Queen's" nurses have always believed that they could keep chronically ill patients free from bedsores far more successfully than their hospital colleagues, and no figure has inspired more affection and esteem than the district nurse. Practice-attachment of home nurses has increased rapidly and with satisfaction to all concerned; general practitioners recognize and appreciate the role of the home nurse more readily than that of other workers in the community health field.

Training

No educational qualification is needed by the State-registered nurse who wants to gain her national certificate. The local authorities which provide training courses may pay nurses while they undertake a programme of supervised practical training and a theoretical part in a technical college or similar institution. The course lasts for 16 weeks and there is a written and practical examination. The syllabus is laid down and standards supervised by a panel of assessors. The home nurse with a national certificate earns £1,203-£1,635; the State-registered nurse who has not gained her certificate gets £45 less. A national training scheme has been introduced for enrolled nurses, who have a 10-week in-service training course. On gaining the certificate the enrolled nurse gets no extra money; this is a disincentive to recruitment since in hospital the enrolled nurse can earn more by promotion to senior

State-enrolled nurse, by weekend overtime, or by working in the geriatric field. There are many areas in home nursing where the State-enrolled nurse can work with satisfaction both to herself and to her patient. In most areas bathing attendants are needed to help the slightly infirm with their personal toilet, but these are often employed by cleansing departments, and are therefore paid more than a State-enrolled nurse or even a recently qualified State-registered nurse; such anomalies do not encourage team spirit.

Changing Functions

The work of the home nurse has changed considerably over the years. Dressings are now usually prepacked sterile ones, though in some areas patients still bake their own dressings in tins (incidentally, many years ago "Queen's" nurses used to encourage their patients to buy cheap paper towels to wrap individual dressing packs long before centrally sterilized supplies were thought of). Mersalyl injections are not given very often since the advent of oral diuretics, and though the nurse has more time for the rehabilitation of stroke patients, there are more postoperative dressings than there used to be and practice nurses wonder if sepsis in hospitals is increasing. Gravitational ulcers are common but there is a strong tradition of success in healing them. "Disposables" have modified the nurse's work, and have also raised severe problems about getting rid of them, which have not received adequate thought.

Work loads in urban areas are heavy, and if a nurse has to make 20 visits in a morning some of these must be very short, and it is easy to become a mere caller with incontinence pads. As recently as 1966 an important study of the work of the district nurse,¹ undertaken when practice attachment was still in its infancy, found that district nurses spent a high proportion of their time on record keeping and travelling, and that few general practitioners were aware of the professional qualifications of nurses who looked after their patients, and had very little contact with them. This has now changed completely, but there still exists a lack of communication between hospital and other services. One home nursing super-