16 children so depleted for 3 months developed staphylococcal pneumonia. Essential fatty acid deficiency in the developing chick produces failure to thrive and mesobronchitis with many similarities to cystic fibrosis (Hopkins, Witter, and Nesheim, 1963), and the genital changes in developing male rabbits rendered fatty acid-deficient (Ahluwalia, Pincus, and Holman, 1967) are suggestive of the changes found in males with cystic fibrosis.

While it is obviously impossible to know whether the case of cystic fibrosis described shows a hitherto undescribed spontaneous variation in the course of the disease, or whether the novel treatment may have caused the improvement, the authors consider that the variation in itself and the rationale of treatment are worth bringing to the attention of other doctors and research workers.

Summary

A child diagnosed as having cystic fibrosis by customary criteria has been given regular parenteral soya oil emulsion from near birth. Sweat tests have improved, pancreatic achylia was relieved, and the child at present remains entirely well. Correction of the essential fatty acid deficiency found in cystic fibrosis may prevent some of the manifestations of the disease.

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Early life of the 'battered child'

Investigations in recent years into the nature of the battered child syndrome (Kempe *et al.*, 1962) and the problems that are connected with it have resulted in a much clearer understanding of the processes leading to child abuse (Skinner and Castle, 1969; Cameron, 1970). An area that was felt to merit further study in this respect was the importance of the pregnancy and early life of children who were later abused. It has been suggested that factors such as poor attention to antenatal care, prematurity, low birthweight, and separation from the mother in the neonatal period may be significant (Courte, 1969; Klein and Stern, 1971). The aim of this preliminary study was to find factors which might be of value in the prediction and thereby the prevention of child abuse.

Methods

In the London Borough of Lambeth cases of 'battering' are reported to the Directorate of Health Observation Handicap Unit which follows them up until the child's fifth birthday when they are transferred to the School Health Service. Accordingly, it was possible to look at all the 28 cases recorded up to December 1972. All the available records were reviewed and in all but four instances we saw the homes and met the parents on follow-up visits.

Information was obtained from the Observation Handicap Unit files, the hospital maternity and neonatal records, the Child Health Clinic records, and by discussion with the general practitioners and health visitors involved.

A control group for comparison of perinatal factors, matched for sex of child and month of birth, was selected from King's College Hospital birth register by means of a table of random numbers. This was felt to be a comparable group as all the abused children had been delivered in hospitals, mainly in South London.

Results

The cases studied here were drawn from a population of 24 300 children under the age of 5 years. Of the 28 abused, 23 were under 2 years and 27 under 3 years of age (see Fig.) giving an incidence of roughly 2 per 1 000 in children 3 years and under. The true incidence will be considerably greater as many cases are either unrecognized or unreported (Jackson, 1972).

Only 10 of the children were girls. In 14 instances the child abused was the youngest child in the family, reflecting the age distribution and possibly a certain vulnerability of the last born. 7 were 'only' children and 3 were the eldest child. In

FIG.—Age distribution at the time of abuse. No. = 28; mean age 57 weeks.

only 3 families was one of the sibs known to be abused. The injuries were all of types previously described, (Caffey, 1946; Kempe *et al.*, 1962), and comprised 16 cases of bruising or other surface trauma, 12 of skeletal injuries, 2 of deprivation or neglect, and one each subdural haematoma, visceral injury, and retinal haemorrhage. 6 of the children had previously been admitted to hospital with a serious illness (in 5 cases a congenital disorder) not attributable to abuse. At the time of abuse, 9 of the mothers were known to be pregnant.

Subsequent to diagnosis, 21 of the children were returned to their families, 8 of these with day nursery placements. The remaining 7 children were received into care.

In general the mothers of the abused children began attending the antenatal clinic later and attended less often than those in the control group, but for this difference to be significant a larger sample is required. There was little difference in the mode of delivery, the gestation period, or the birthweight of the child.

Six study children had been separated from their mothers in the neonatal period when nursed for varying periods in special care units. Only 2 of the control group were separated.

The home environment was often appalling, though apparently not unusual for the area. In many cases there was no bathroom, lavatories were shared, and cooking facilities were totally inadequate. A lack of playing space and facilities for children was evident (see Table).

Often the parents appeared to be overwhelmed by their problems, particularly by financial difficulties and bad housing. 12 of the families were known to be in private accommodation and thus were ineligible for concessionary allowances such as rates

TABLE
Details of home environment of abused children

Adverse features of home environment	No. of cases
No bathroom	7
Shared bathroom	3
Shared lavatory	8
No kitchen	2
Shared kitchen	2
No children's playing facilities	10
Inadequate children's playing facilities	6

and rent rebates available to Council tenants. Where means existed to improve their situation these were not often taken up, either because they were not aware of the services available or they were unwilling to accept help.

In 10 of the cases the parents admitted that they had resented the pregnancy and that the child had been unwanted. In 2 of these cases they had requested a termination. Many of the parents had seen the abused child as being particularly difficult or 'different' from sibs and other children. There was evidence of maternal childhood deprivation in 7 cases. 5 had spent long periods in children's homes, one was brought up by grandparents until 10 years old and one had multiple hospital admissions. Several of the fathers described their childhood as hard or unhappy. One in particular at the age of 15 evicted his alcoholic father after repeated abuse of the mother and children.

Ten of the mothers had received treatment for mental disorders, 7 for depression, 2 for psychosis, and one for a personality disorder. Information on the fathers was incomplete but 3 were known to have histories of depressive illness and one was psychotic.

Discussion

Using the results and experience gained from this study and published reports on the subject it is possible to suggest some of the underlying mechanisms of this syndrome. It seems that those who abuse children in their care form but one part of a spectrum of people who are in some ways inadequate in their ability to handle the 'pressures' which they feel they are subjected to by their environment. These 'pressures' may be readily apparent such as poor housing, an unsatisfactory job, financial hardship, or may be less tangible in the form of emotional disintegration of the marriage, social isolation, friction with relatives and neighbours, mental instability, etc. When frustrated by being unable to alter their life situation as they would wish, the response of these people is essentially maladaptive. In these particular cases

the response takes the form of child abuse but could as easily be other antisocial acts both within and outside the family.

While it may be difficult to alter the fundamental make-up of such people at this stage in their lives, early recognition of the features described would allow specific supportive therapy to be applied to the family at risk. Involvement of the social services and health visitors, improving housing conditions, obtaining a day nursery placement for the child, and possibly psychiatric help may be needed.

Ideally, early preventive measures should be undertaken. Screening of the parents in the antenatal and postnatal periods with regard to their attitudes and feelings possibly coupled with the medical staff's assessment of their approach to the child would be of value in defining the 'at risk' group. Where the child is in a special care unit every effort should be made to encourage the mother at least to handle and feed her child whenever possible. It should be remembered that those families coping with a child who is in any way abnormal, be it a congenital or acquired defect, may be especially at risk.

Summary

The obstetric histories and early lives of 28 subsequently abused children are reviewed. The youngest child, more often male, was shown to be most 'at risk' especially if the mother was pregnant. Reduced antenatal care, separation of mother and child during the neonatal period, illness, poor environment, and parental problems were common features.

It is felt that these and other difficulties may be regarded as 'environmental pressures' leading to child abuse by susceptible individuals. Early recognition of such situations could lead to preventive and supportive measures.

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Complication of suprapubic bladder aspiration

Suprapubic bladder puncture has become a well-recognized method of obtaining uncontaminated urine specimens. It is particularly accepted in paediatric practice, where the collection of a satisfactory 'clean' urine specimen can be very difficult. There are obviously several theoretical complications, for instance bowel puncture, puncture of a large vessel, and leakage of urine into the tissues, but in practice very few complications are observed. We report 2 cases of anterior abdominal wall abscess occurring after suprapubic bladder puncture. In both cases the technique used was identical. The hands were thoroughly washed, but not scrubbed. The skin was cleaned with 0.5% chlorhexidine in 70% spirit. A 10 ml syringe was used with a 21G needle. The needle was inserted in the midline approximately 1 cm above the suprapubic skin crease and perpendicular to the anterior abdominal wall. It was advanced 2.5 cm and the syringe plunger withdrawn. If no urine was obtained, the tension was maintained on the plunger and the needle withdrawn slowly. The procedure was performed once only, and no probing was done.

Case reports

Case 1. A 9-day old Irish boy was admitted with a 6-day history of loose stools. On examination he was dehydrated and investigations revealed a serum sodium of 172 mEq/l, potassium 4.0 mEq/l, urea 154 mg/100 ml, and bicarbonate 8.0 mEq/l. Haemoglobin was 24 g/dl, total white blood count 21 000/mm³, 34% neutrophils and 64% lymphocytes. Nose, throat, umbilical, and rectal swabs revealed no abnormality. Attempted suprapubic bladder puncture produced intestinal contents. He was treated with intravenous fluids and kanamycin and cloxacillin. 2 days after admission he developed an abscess at the site of the suprapubic puncture which discharged sterile pus 3 days later. He made a good recovery from his illness and was discharged home 9 days after admission.