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A 'normal' erythrocyte sedimentation rate (ESR) has been suggested as a criterion for the identification of osteoarthritis (OA). This idea was examined in the 1968 Rhondda Fach follow-up survey by measuring the Westergren ESR at one hour in 520 persons (98% of individuals who were seen). A logarithmic transformation of the data satisfactorily corrected skewness of the distribution and instability of the variance, permitting comparison of means in subgroups with various characteristics. The ESR increased with age and was higher in miners than non-miners, and higher still in women. It was also higher in those who had migrated to England but was not directly correlated with social class.

Logarithmic transformation yielded a mean ESR of 8 mm/hour with a range ( $\pm 2$  SD) from 2-41. The generally accepted 'normal' range (Dacie and Lewis, 1963) is 3-5 mm/hour in males and 4-7 in females, yet in 60% of men and 81% of women in the Rhondda the ESR exceeded these values. Thus the empirical 'normal' range is unsatisfactory, probably because the gradient with age was ignored. In clinical practice a value of 20 mm/hour is often used as the dividing line, and 58% of the Rhondda sample had results less than 10 and a further 27% showed values between 10 and 19. *Ante hoc* postulations that ESR would correlate with chest expansion (inversely), chronic bronchitis, other chest diseases, antibodies to pigeon droppings, and haemoglobin and haematocrit (both inversely) were confirmed, but, contrary to expectation, the ESR did not correlate with rheumatoid factor.

The records of all individuals with a value in excess of 20 mm/hour were reviewed, and the prevalence of various diseases was compared with that found in the lower ESR group. Five per cent of those with an ESR  $\leq 20$  mm/hour suffered from disease, whereas 29% of those in whom the ESR exceeded 20 were diseased. Notably, the ESR exceeded 20 mm/hour in almost one-third of people with OA, a reflection that OA is common, particularly in older people, and that these individuals may also suffer from other diseases. Thus to demand a 'normal' ESR as a diagnostic criterion is unrealistic.

Dacie, J. V., and Lewis, S. M. (1963). *Practical Haematology*. Churchill.

**A Computer-assisted Developmental Paediatric Programme.** K. CARTWRIGHT, A. H. SNAITH, and A. J. TRICKEY (County Health Department, Matlock, Derbyshire)

A computer-assisted developmental paediatric programme was implemented in the County of Derbyshire in May 1972. The objectives of the scheme are to identify all handicapped children as early as possible, to improve counselling services for mothers, to provide for close collaboration with the County Education Department in the investigation of medico-educational problems, to improve the monitoring of the child population, and to provide an information system for clinical and research

purposes. The computer has been used (1) in the management and organization of the system and (2) to improve the data processing and improve child health records.

The main characteristics of the programme are:

(1) *Timed appointments* These are sent to all children four times in the first five years of life for medical examination at the ages of 6 weeks, 10 months, 2 years, and at school entry.

(2) *The clinical examination* This has been devised with emphasis on the physical, intellectual, emotional, and social development of the child and consists of 32 individual items, all of which are recorded by the clinician.

(3) *Training* An extensive and on-going in-service training programme in the required clinical techniques has been devised in collaboration with the consultant paediatricians at Derby Children's Hospital. These clinicians have been party to all the arrangements and are responsible for the clinical training.

(4) *Additional screening tests* Certain additional tests are carried out by health visitors as part of the programme. These include tests of vision and auditory function.

(5) *Recording of data* There is both a computer record and a clerical record. The computer record consists of identification data and positive medical findings only and is held at headquarters and there is such a record for all children. The clerical record is retained for the clinician at the clinic and provides a complete record for all positive cases.

(6) *Recall system* Provision is made for additional examinations of all suspect children. Positive cases are handled outside the screening system and undergo a comprehensive assessment.

It was not possible to design a screening programme which would meet the ideal requirements as recommended in the Sheldon Report 1967. Resource constraints compelled restriction of the programme to four examinations in the first five years of life. Each examination lasts 20 minutes, so that on average eight children can be seen in each session. To provide for 50,000 children in the pre-school age group, 11.3 (from an establishment of 27) doctors are required to complete the comprehensive screening programme. Some 50 general practitioners have volunteered to contribute to the system on a sessional basis (employed by the Health Department) and all will undertake the full training course. Departmental staff will therefore carry out about half the work and general practitioners the other half.

Preliminary results on the first 1,000 children invited show an attendance at clinic of 81%. Of these, 10.3% had some degree of abnormality of whom 73% have been asked to attend for further examination.

SECOND SESSION (Chairman: PROFESSOR SIR RICHARD DOLL)

**Measurement of Blood Urea to assess the Prognosis of Hypertensive Pregnancies.** C. W. G. REDMAN, L. J. BEILIN, J. BONNAR, and SIR RICHARD DOLL (Department of the Regius Professor of Medicine, Oxford)

During a trial of antihypertensive therapy in pregnancy, plasma urea has been measured in all participants.

Patients enter the trial if they present at or before 32 weeks' gestation. Hypertension is diagnosed if blood pressure readings taken under strictly defined conditions of rest and posture equal or exceed 140/90 on two occasions. An attempt has been made to identify all hypertensive patients attending one maternity department.

Except when diuretics were used, antihypertensive therapy has not affected the final plasma urea measured before delivery. Four patients who received diuretic therapy have been excluded from the analysis.

In 120 women the urea levels at 28, 32, and 36 weeks' gestation have been examined in relation to the outcome of each pregnancy. The average urea at all gestations has been about 15 mg/100 ml and no individual level ever exceeded 45 mg/100 ml. The birthweight of the neonate is on average reduced, the higher the maternal urea. This trend appears at 28 weeks' gestation but is most striking at 32 weeks when a urea level above 20 mg/100 ml is associated with significantly smaller babies. At 36 weeks' gestation the same relation holds if the urea exceeds 25 mg/100 ml. The reduction in birthweight is in part explained by fetal growth retardation *in utero*: when maternal plasma urea is very low ( $\leq 10$  mg/100 ml) there are fewer infants than expected whose birthweights are one standard deviation or more below the mean for gestation compared with a marked excess if the urea level exceeds 20 mg/100 ml.

No perinatal deaths occurred when maternal urea was below 15 mg/100 ml at 28 weeks and 20 mg/100 ml at 32 weeks. But the association between a maternal blood urea raised above these levels and perinatal death was highly significant ( $P < 0.0001$ ).

Small variations in maternal blood urea are therefore a valuable indicator of the prognosis of a hypertensive pregnancy.

We gratefully acknowledge the assistance of Mr. J. R. P. O'Brien and his staff of the Department of Biochemistry, Radcliffe Infirmary.

**Randomized Controlled Trial of the Treatment of Moderate Hypertension.** M. W. ADLER (*Department of Social Medicine and Clinical Epidemiology, St. Thomas's Hospital Medical School*)

A study has been started in a group practice in Lambeth, London, with the following objectives:

- (a) to measure the effect of antihypertensive treatment on subsequent mortality and morbidity of subjects with moderate hypertension (diastolic blood pressure 90-114 mmHg inclusive);
- (b) to ascertain the number of subjects with hypertension previously unknown to the practice and the number of subjects with hypertension who are receiving treatment;
- (c) to see whether subjects with moderate hypertension are willing to start and continue therapy over a number of years;
- (d) to assess the feasibility of screening and treating for hypertension from a general practice;
- (e) to measure the cost of screening for moderate hypertension in general practice and entering suitable patients into the treatment trial.

The study is confined to men aged 35 to 64 years. Patients are randomly allocated to two groups—treatment and control. It is intended to follow up both groups for five years. The study is being conducted within the context of general practice because, should a reduction in morbidity and mortality eventually be shown, it will be the general practitioner who will be best suited to perform this task.

**A Comparison of the Acceptability of a Self-administered Cervical Cytology Test with that of the Standard Service.** JANET CARRUTHERS (*Department of Public Health, London School of Hygiene and Tropical Medicine*)

The primary aim of this study has been to compare the acceptability of the cytopipette as a self-administered screening test in the prevention of cervical carcinoma with that of the usual cervical smear test taken by a doctor. It is postulated that a self-administered test, received through the post, may overcome some of the known reluctance of women in high-risk groups to attend cytology clinics. A further consideration has been the possibility that this type of test might prove acceptable to women who are for any reason isolated, such as those living in rural areas.

The study was designed as a randomized controlled trial. The survey population numbered just under 20,000 women living in an urban and rural area of West Sussex. They were randomly allocated according to the area of residence to either the cytopipette group or the control group. The latter were offered appointments for conventional scrape examinations at a clinic run by the County Council or by their own general practitioner. The study was carried out in conjunction with the Health Department of West Sussex County Council using the Council's IBM 360 computer. All specimens were examined in the Department of Cytology at St. Stephen's Hospital, Chelsea.

A concurrent study was carried out by the Centre for Social Research at Sussex University, the main aim being to collect data on the attitudes of responders and non-responders in relation to cervical cytology.

Preliminary analysis of the data showed that the response rate for the pipette group was 52% and for the scrape group 38%. Further analysis showed the pipette to be most acceptable to young women and those living in rural districts. At the present stage of analysis it has not been possible to demonstrate that the pipette is more acceptable than the conventional scrape examination to the high-risk groups. It is suggested that the acceptability of the pipette might be improved by using a personal approach via the agencies of general practitioners, district nurses, or health visitors.

**Sociological Factors Affecting Use of Cervical Screening Tests.** N. D. RICHARDS and P. J. M. MCEWAN (*Department of Community Health, University of Nottingham, and Centre for Social Research, University of Sussex*)

Social research into cervical cancer prevention has hitherto concerned itself primarily with sociodemographic factors (such as age and social class) which identify