

DISEASES ASSOCIATED WITH EXTREME ELEVATION OF ESR

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INTRODUCTION

ESR is a frequently ordered investigation. A normal ESR is reassuring but an elevated ESR may justify lengthy, costly laboratory and radiological investigations. Although extreme elevation of ESR (100mm/hr or more) may be alarming, it may not mean that a serious disease is present (Zacharski, 1966).

The sedimentation of cells depends on the downward force of the red corpuscles and the retarding forces of the plasma protein. Plasma constituents exert a more profound influence on ESR than do conditions of red cells. Fibrinogen is the single protein that influences ESR the most (Wintrobe, 1974). Elevations of the ESR are related to the reduction in the albumin: fibrinogen and globulin: fibrinogen ratios (Dintessfass and Steward, 1974).

This study analyses the disease conditions in this country that will cause an extreme elevation of the ESR (100 mm/hr. or above).

PATIENTS AND METHODS

All patients who were admitted between September 1977 to August 1978 into the Medical Unit I and Unit IV of General Hospital Kuala Lumpur had an ESR done routinely on them. The Westergreen method was used to determine the ESR. The test was performed, on venous blood collected in EDTA bottle, on the same morning. The degree of erythrocyte sedimentation was recorded after one hour. Patients with ESR greater than 100 mm/hr were studied in detail

and form the basis of this paper. The investigations include routine urine analysis, full blood picture with the relevant haematological indices, chest x-ray, cultures of the sputum and blood, liver function test, blood urea and serum electrolytes, L.E. cells. Where indicated, other investigations such as bone marrow examination, serum fibrinogen and platelet function test were done.

RESULTS AND DISCUSSION

53 patients had ESR of 100 mm or more over this study period. Of the 53, 27 were males and 26 were females. The age distribution is summarised in Table I. Ten of the patients (19%) were less than 20 years of age, 14 patients (16%) were over 50 years old. The rest were between 20 and 49 years of age. Of the 53 patients, 19 were Malays, 15 Chinese, 18 Indians and 1 Eurasian. The diagnoses are listed in Table II. In only three patients, the diagnosis was not established even after intensive investigations. This is comparable to other series (uireby and Leven, 1952, Zacharski and Kyles, 1966) of four percent and three percent respectively.

In 11 patients (19%) collagen disease was the cause. The experience of Zacharski (1966) was similar (17%). Infections (11%) and renal diseases (18%) cause a rise in the ESR similar to that found by others (Zacharski, 1966, Loren, 1952).

Table I

ESR 100 mm or more according to age groups

Age (years)	No. of Patients
0 — 9	2
10 — 19	8
20 — 29	15
30 — 39	7
40 — 49	7
50 — 59	7
60+	7
Total	53

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Table II

Diagnosis of 53 patients with ESR of 100 mm or more in one hour

Diagnosis	Number
Collagen/Rheumatic	11
SLE	2
Rheumatic Fever	4
Rheumatoid Arthritis	5
Renal	10
Nephrotic Syndrome	4
Chronic Renal Failure	4
Pyelonephritis	2
Haematology	9
Leukaemia	3
Myeloma	3
Aplastic Anaemia	2
Haemolytic Anaemia	1
Gastroenterologic	11
Chronic Diarrhoea	1
Cirrhosis of liver	4
Amoebic liver abscess	2
Alcoholic Hepatitis	2
Cholecystitis	1
Chronic Active Hepatitis	1
Infectious	7
Malaria	2
Tuberculosis	2
Subacute Bacterial Endocarditis	2
Typhoid	1
Others	2
Carcinoma cervix	1
Cardiac failure due to ischemic heart disease	1
Unknown	3

Haematological disorders account for about 15 per cent of patient in our series. On the other hand, in Zacharski's (1966) experience the percentage was double. In gastrointestinal and liver diseases, the percentage of patients with raised ESR in our series was twice as much as that found by Zacharski (1966). Just slightly more than ten percent of patients has ESR above 150 mm or more. The majority of patients,

Table III

Range of ESR value obtained in 53 patients

Value of ESR (mm Hg)	No. of Patients
100 — 109	8
110 — 119	16
120 — 129	15
130 — 139	5
140 — 149	2
150	7

the rise was between 110 mm to 129 mm (Table III). One surprising finding was that one patient with congestive cardiac failure due to ischemic heart disease had an ESR of 118. A report test showed it to be 109. No other cause was found despite extensive laboratory and radiological examinations as well as exhaustive clinical history and physical examinations. For most of our patients the diagnosis could be made on the basis of history, clinical examination, simple laboratory and radiological investigations which is normally available in most hospitals in the country.

SUMMARY

Fifty three patients with an ESR of 100 mm or more were detected from a year's list of admission to the medical wards. They were examined clinically and had laboratory and radiological tests done on them. The causes of the diseases were analysed and tabulated. No particular disease was found to have a particular range of ESP. One surprising fact was that a patient with congestive cardiac failure due to ischemic disease had a raised ESR. Most of the causes of raised ESR could be found clinically, supplemented by simple laboratory and radiological examinations.

REFERENCES

- Dintefass, L. and Steward, J. H., (1974). Aggregation of Red Cells and Plasma Viscosity in Renal Patients treated by Haemodialysis of Kidney Graft Effect of Proteins and ABO Blood Groups. *Microvasc. Res.* 7, 342 — 352.
- Wintrobe, M.M., (1974) *Clinical Haematology*, 7th Edition, Lee Febiger, Philadelphia, 125 — 128.
- Zacharski, L.R. and Kyle, R.A. (1966). Significance of Extreme Elevation of Erythrocyte Sedimentation rate. *J.A.M.A.* 202, 116 — 118.
- Zacharski, L.R., (1976). *The Erythrocyte Sedimentation rate.* *Brit. J. Hosp. Med.*, 14, 53 — 62.