ERYTHROCYTE SEDIMENTATION RATE

Pages with reference to book, From 1 To 2

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The Erythrocyte Sedimentation Rate (ESR) is one of the most commonly demanded tests from the laboratory. A raised ESR usually signifies disease. A diagnosis can be established on taking a careful history and carrying out a detailed physical examination. ESR is the most useful tool in the diagnosis of temporal arteritis and its response to therapy.

The Erythrocyte in plasma is subjected to two opposite forces. The force of gravity pulls it down and buoyancy pushes it upwards. Buoyancy is proportional to the volume of the erythrocyte and bulk plasma flow or the currents formed by the downward moving cells. Aggregation of the redeells increases their sedimentation. This is because an enhancement in the total mass exceeds the increase in volume. This aggregation or rouleaux formation is found in myeloma, macroglobulinaemia and cryoglobulinaemia.

Abnormal erythrocytes also change the ESR. Macrocytes sediment more rapidly and microcytes more slowly than normal cells. This is due to an alteration in the surface to volume ratio. in sickle cell anaemia ESR is retarded as the abnormal shape of erythrocytes interferes with the aggregation.

An elevated ESR has at times been encountered in asymptomatic persons. Studies have been carried out randomly[1-4] on correlating disease with an elevated ESR, and it has been concluded that the ESR makes a very small contribution to disease detection in asymptomatic persons. in symptomatic individuals the ESR sometimes confirms the diagnosis, though when symptoms are vague it may not be very useful. Occult malignancy has been associated with a raised ESR. This is again not specific except in patients with metastatic cancer where the ESR is very much raised with a rate greater than 100mm in first hour. This may be taken as a definite clue. Such a high reading is also found in infection, connective tissue disease and myeloma. Temporal arteritis signified by a tender reddened or nodular temporal artery, jaw claudication and transient monocular blindness[5], also has a very raised ESR which is an important diagnostic factor and justifies the initiation of steroid therapy.

Rheumatoid Arthritis is another condition where the ESR is found to be high though it is not a criteria for diagnosis but it is definitely a predictor in a patient with polyarthritis or polyarthralgia. In conditions of acute infection, the ESR remains normal in the first few days in contrast to leukocytosis and fever. It also takes longer to return to normal. [6] So also in patients with pulmonary tuberculosis even with advanced lesions, a normal ESR may be encountered. This indicates that a low ESR does not rule out tuberculosis. [7]

ESR has also been used to monitor the treatment efficacy and improvement in conditions like Temporal Arteritis and Rheumatoid Arthritis. It is also useful in the follow up of treated cases of Hodgkins disease when a relapse may be detected by a rise in the ESR[8].

The Erythrocyte Sedimentation Rate, though a simple and useful laboratory test should not be taken as a sole indicator to disease. A detailed history and a thorough clinical examination are the basis of a diagnosis and the ESR may act as a helping factor.

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