Neutrophil Function (DHR) Test

General information

Chronic Granulomatous disease (CGD) is an inherited immunodeficiency resulting from the inability of an individual's neutrophils to produce superoxide ions because of defective NADPH oxidase.

Normally this series of reactions, which is better known as the 'neutrophil respiratory burst' or oxidative burst, results in the production of hydrogen peroxide, hypochlorous acid and other reactive oxygen species. The end products of this process are highly toxic to ingested microorganisms and the process has long been recognized as an essential part of the host's innate immunity.

It is a first line of defence against acute bacterial and fungal infections. CGD patients suffer from recurrent life-threatening bacterial infections from birth, although some patients present later in life.

Specimen transport: At room temperature. Samples must be received **before 3pm** on weekdays only (not including bank holidays).

Repeat frequency: Repeat only indicated if the test has failed (particularly if the control sample has failed) or following bone marrow transplantation of an affected individual.

Laboratory information

Volume and sample type: 1mL of peripheral blood in heparin must be received, with the sample <4 hours old. In addition, a fresh, age (adult for adult, child for child) and sex matched control sample is required. EDTA blood is not suitable for this test.

Method: Flow cytometry

Units: Stimulation Index.

Reference range: Normal

Participation in EQA scheme: No formal EQA scheme is possible (as a fresh sample is required). Internal QA is performed by periodically re-testing well-defined patients with the condition.

Turnaround time (calendar days from sample receipt to authorised result): Mean - 2.

Clinical information

Indications for the test: This assay can be used to identify patients with CGD as well as carriers of the defective gene responsible for the condition.

Factors affecting the test: Temperature, delay in processing and sample type.
MPO deficiency may cause false positive results.

Interpretation of results: A relevant interpretive comment will be added by the laboratory.

(Last updated February 2024)