

Everything You Always Wanted to Know About the CD-57 Test

But Were too Sick to Ask

by Ginger Savely, RN, FNP-C

From coast to coast, frustrations abound among patients and clinicians regarding the diagnosis of chronic Lyme disease. Misinformed health care providers in Texas and surrounding states consider the infection rare and non-endemic. They are inclined to rule out Lyme disease based on the negative result of a laboratory test that, unbeknownst to them, is highly insensitive. In the absence of a reliable laboratory test or adequate experience in the recognition of the varied and complex presentations of the illness, most clinicians are ill-equipped to diagnose chronic Lyme disease. Many patients suffer needlessly for years, hopelessly lost in the maze of the health care system, looking for answers and enduring the skepticism of practitioners inexperienced with the disease's signs and symptoms.

What is needed is a better Lyme test or some other objective measure to persuade the practitioner to consider the diagnosis of chronic Lyme disease. Enter the CD57 test! You may have heard the term "CD57" tossed around on chat groups, or your Lyme-literate health care provider may have even explained the test to you in one of your moments of brain-fogged stupor. What is this number that sounds more like a type of Heinz ketchup than a lab test, and what in the world does it have to do with Lyme disease?

Let's start by going back to basic high school biology. You may remember that white blood cells (a.k.a. leukocytes) are the components of blood that help the body fight infections and other diseases. White blood cells can be categorized as either granulocytes or mononuclear leukocytes. Mononuclear leukocytes are further sub-grouped into monocytes and lymphocytes.

Lymphocytes, found in the blood, tissues and lymphoid organs, attack antigens (foreign proteins) in different ways. The main lymphocyte sub-types are B-cells, T-cells and natural killer (NK) cells. B-cells make antibodies that are stimulated by infection or vaccination. T-cells and NK cells, on the other hand, are the cellular aggressors in the immune system and are our main focus in the discussion that follows.

Let's pause a moment and introduce something you probably never learned about in high school biology class: CD markers. CD, which stands for "cluster designation", is a glycoprotein molecule on the cell surface that acts as an identifying marker. Think of comparing cells as comparing people. Humans are made up of innumerable superficial identifying characteristics (such as hair color,

eye color, etc.) and so are cells. Cells probably have thousands of different identifying markers, or CDs, expressed on their surfaces, but 200 or so have been recognized and named so far.

Each different marker (or CD) on a cell is named with a number, which signifies nothing more than the order in which the CD was discovered. On any given cell there are many different cluster designation markers (CDs), giving each cell its unique appearance and function but also linking certain cells by their similarities (like grouping all people with brown hair or all people with blue eyes). Cells that have a certain kind of CD present on their surface are denoted as + for that CD type (e.g., a cell with CD57 markers on its surface is CD57+).

NK cells have their own specific surface markers. The predominant marker is CD56. The percentage of CD56+ NK cells is often measured in patients with chronic diseases as a marker of immune status: the lower the CD56 level, the weaker the immune system. You may have heard Chronic Fatigue Syndrome patients talk about their CD56 counts.

A smaller population of NK cells are CD57+. A below-normal count has been associated with chronic Lyme disease by the work of Drs. Raphael Stricker and Edward Winger. No one knows for sure why CD57+ NK cells are low in Lyme disease patients, but it is important to note that many disease states that are often confused with chronic Lyme (MS, systemic lupus, rheumatoid arthritis) are not associated with low CD57+ NK counts. The good news is that for most Lyme patients the CD57+ NK level increases as treatment progresses and health is regained.

CD57 markers can also be expressed on other kinds of cells, including T-cells, so it is important to distinguish between CD57+ T-cells and CD57+ NK cells. Clinicians need to be aware that many testing laboratories claiming to perform the CD57 test are actually looking at CD57+ T-cells rather than CD57+ NK cells, which are the cells of interest in chronic Lyme disease.

In order for a testing laboratory to measure the CD57+ NK level, it first measures the percentage of lymphocytes that are CD57+ NK cells. Then an absolute count is calculated by multiplying that percentage by the patient's total lymphocyte count. The standard normal range for the absolute CD57 NK count is 60 to 360 cells per microliter of blood. This wide range was established based upon test results of hundreds of healthy patients. By these laboratory standards, a test result below 60 cells per microliter would be considered below normal and therefore associated with chronic Lyme disease. However, a recent study of my Austin patients has led me to believe that 100 cells per microliter is a more reliable threshold separating Lyme patients and healthy controls.

When Drs Stricker and Winger discovered that CD57+ NK cells are low in chronic Lyme patients and tend to increase with patients' clinical improvement, an

opportunity arose for Lyme-literate practitioners to utilize a handy tool to aid in the diagnosis of chronic Lyme disease, to follow treatment progress, and to determine treatment endpoint. Just as AIDS patients have always held great store in their CD4 T-cell count, Lyme patients now have a fairly reliable marker of the status of their illness.

It is important to remember that the CD57 result is just a number; far more important is the patient's clinical status. An old professor of mine used to say, "treat the patient, not the lab test!" There is still much we do not know about the CD57 marker and what other factors may lower or raise it. However, overall, the CD57+ NK count is a useful tool in diagnosing and treating chronic Lyme disease in most patients. As a measure of immune status, it provides an indirect measure of bacterial load and severity of illness. Furthermore, in a patient who has a negative or indeterminate Lyme test but is highly suspect for the disease, the clinician may utilize the CD57+ NK count as one more piece in the complex puzzle of a Lyme disease diagnosis.

Postscript: If you would like your health care provider to order the CD57 NK test for you, your blood sample needs to be drawn into an EDTA tube (lavender top) on Monday through Thursday and sent immediately to either LabCorp in Burlington, NC, or Clinical Pathology Laboratories (CPL) in Austin, TX. LabCorp and CPL are the only two labs that perform this test properly. Quest does NOT. The LabCorp test code is #505026 and is named *HNK1 (CD57) Panel*. The CPL test code is #4886, *CD57 for Lyme disease*. The test is time-sensitive and must be performed within 12 hours of collection, so blood should not be drawn on a Friday or results may be inaccurate.