

Joyce Niblack Memorial Conference

Lactate Dehydrogenase (LD)

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Introduction

Scientists changes its name from LDH to LD about 30 years ago.

Physicians do not like change and they have their own journals so they kept the old names of lots of things.

Normal function

You don't need to know the details but

- ❖ Glucose metabolism is mostly done by a group of enzymes collectively called the *Kreb's Cycle*.
- ❖ The last enzymatic step is the conversion of lactic acid to an easily excretable compound called pyruvate.
- ❖ The enzyme that does that is lactate dehydrogenase.

Normal function

- ❖ Pretty much every cell in the body uses the Krebs Cycle preferentially.
 - ❖ That means that lots of different cells have a lot of LD
 - ❖ The liver, heart, pancreas, kidneys, skeletal muscles, lymph tissue, GI tract cells, red blood cells, and so on.
- ❖ The enzyme is bound to the cell membrane so when a cell begins to undergo mitosis, the enzyme is released into the peripheral blood.
- ❖ When cells are damaged or dying, this enzyme is released.

Normal function

❖ This release into the blood stream constitutes the “reference interval” that mirrors cell damage and death.

❖ When more cells are damaged/dying, the enzyme concentration in the blood stream is increased.

❖ Examples

- ❖ So a heart attack will increase the LD
- ❖ The infection, hepatitis, will increase the LD.
- ❖ Getting significant dental work will increase the LD
- ❖ And so on.

❖ Cells that are more fragile, getting damaged by chemotherapy or immunotherapy will increase the LD.

Significance

❖ SO

❖ What does the LD result tell you?

❖ If within range, then there is likely no increase in typical cell turnover

❖ If increased, then

- ❖ You could have a cold or fell off a bicycle or something else,
- ❖ You could have had an infection;
- ❖ You could have had some type of chemotherapy/immunotherapy.
- ❖ You could be experiencing a resurgence of malignant cell growth.
- ❖ The phlebotomist could have hemolyzed the red blood cells during collection.
- ❖ If the specimen had to be transported or stored, then either of those done improperly could have damaged the cells.

Significance

❖ SO

❖ How do you know?

- ❖ By a careful history
- ❖ By knowing what drugs (and other things) you are taking
- ❖ By your physician's understanding of everything else that is going on
- ❖ By a redraw and a retest (Most physicians will do this anyways, usually in a month or so)

Patients on any type of chemotherapy or immunotherapy will tend to have an increase. As long as it does not increase wildly, most physician will interpret that as “drugs are working”.