

In the name of god

Approach to a child with abnormal LFT

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Introduction

*Liver is a **multifactorial organ** which is involved in a number of critical functions including:*

1-Excretory

2-Synthetic

3-Metabolic

Tests that evaluate liver function consist of:

- 1-ALT/AST: Indicate liver parenchymal injury*
- 2- ALP, GGT, 5- NT: Indicate impaired bile flow (cholestasis)*
- 3-Alb./PT: Indicate impaired liver synthetic function*
- 4- Bilirubin and BA: Indicate impaired hepatic excretory function*
- 5- Ammonia /indocyanine green: Indicate hepatic metabolic function*

Introduction

Liver enzymes:

1-Do not measure the liver function, they show liver damage (*LFT is imprecise, misnomer*).

2- May be normal in a case with advanced liver damage (*compensated cirrhosis*), *poor sensitivity*.

Therefore normal levels of enzymes do not R/O liver disease.

Introduction

Liver enzymes:

3-They are *not specific* for liver, can be abnormal in a case with normal liver(*poor specificity*).

4-There is no direct relationship between the levels of enzymes and degree of liver damage.

5-There is a strong correlation between ALT/AST and *BMI*

Introduction

Sources of Enzymes:

1- Hepatic(Hepatobiliary)

2- Extra-Hepatic:

1- Myopathy/ cardiomyopathy

2-CD

3-Thyroid disorders

4- ...

*Therefore it is better to say **serum transaminases** instead of **liver enzymes**.*

Introduction

Basic Questions:

1-What are the upper limit of normal (*cutoff values*) of liver enzymes?

The sensitive *cutoff for ALT* depends on the:

1- age

2- sex

Adults:

Men:29 IU/L , Women:22 IU/L

Children:

Boys:26 , Girls:22

Approach to a case with elevated enzymes

Basic questions:

- 1- Is there any symp/signs or lab. findings in favor of liver disease?*
- 2- Is there any sign/symptoms in favor of non-hepatic causes of enzymes elevation?*
- 3- What is the level and duration of enzymes elevation?*
- 4- Is there any Hx. of drugs or herbal medicine usage?*
- 5- Is there Hx. of heavy exercise, fever, IM injection , seizure, .. recently?*

Approach to a case with elevated enzymes

- 1-If there is any symp/sign or lab. finding in favor of hepatic or non -hepatic disease, work up for the possible disease should be done.*
- 2- In those cases **without any finding**, approach depends on the **enzyme levels**.*

Classification of abnormal liver enzymes:

1-Normal: up to 2 times the ULN

2- Mild elevation: up to 5 times the ULN

3-Moderate elevation: >5-10 ULN

4-Marked (severe) elevation:>10 ULN

Approach to a case with elevated enzymes

Approach on the bases of enzyme levels:

1- those with mild elevation:

Need FU for 3-6 mo.s.

*If there was no decline or increased enzyme level,
liver Bx. should be done.*

Note:

*In a significant number of these cases enzyme returns
to normal range during this period.*

Approach on the bases of enzyme levels

2-those with moderate or marked elevation:

- 1- Work ups for all the probable causes of elevated enzymes should be done as soon as possible.*
- 2- In those cases without detection of etiology, liver Bx. should be done as soon as possible.*

With Thanks

