

So when we talk about diagnosis of hypothyroidism, we should not expect major clinical signs or symptoms. Because diagnosis from a biochemical point of view is so straightforward that most of the patients will have minor symptoms or even on the regular checkups physicians will just add TSH in three to four on their regular checkups and then we'll start looking at those patients that have slightly elevated TSH. So how do we make the diagnosis of hypothyroidism.

First, we ask for serum levels of TSH and serum levels of T4 best free T4 is the ideal. So you're going to have elevated serum levels of TSH combined with decreased levels of free T4. So a lot of people will think well, why are we're not asking for T3 levels.

What happens is that the thyroid system, which is the thyroid gland and the pituitary gland and the hypothalamus, they bend over backwards to keep the three normal in the circulation. So that a hypothyroid patients will always or will only exhibit decreased levels of T3 way into the syndrome. I mean it's after really T4 is really low and TSH is real is high is when serum T3 levels will decrease.

So from a diagnostic point of view it has no role whatsoever asking for serum T3 levels for hypothyroidism. So we will see a slight decrease in free T4 and an elevation in TSH and that closes the diagnosis of hypothyroidism.

Now there's a lot of question and controversy about how high the TSH should be. So we know that more or less the normal range for serum TSH is between 0.45 and 4.5 microunits per ml. And we in terms of guidelines and these are guidelines in Europe and the United States and Latin America and Asia they all talk about 10 as being the threshold for the diagnosis of hypothyroidism.

So if an individual patient has a TSH that's higher than 10 even if the T4 levels the free T4 levels are within the normal range or within the lower limit of normal range those patients should be treated. They will benefit from treatment with levothyroxine. So if you have a patient with the TSH that's higher than 10 that sort of closes the diagnosis of hypothyroidism. And at that level of TSH you will frequently see a low free T4, over free T4 or a free T4 that's towards the low end of the normal range.