Changes to Prolactin reference intervals

There have been two recent changes made to the prolactin reference intervals at Labtests, namely removing the lower limit and changing the upper limit.

After consultation with Auckland endocrinologists and chemical pathologists it was agreed that the lower limit for the prolactin reference interval (70 mIU/L for males and females) does not add value to interpretation of prolactin concentrations and is therefore removed as of Monday December 14th 2015.

In by far the majority of cases it is elevated prolactin concentrations that are of clinical relevance; for instance when investigating the possibility of a prolactinoma, investigating infertility, subfertility or amenorrhoea, monitoring treatment for a prolactinoma and side effects of antipsychotic drugs.

A low or undetectable prolactin on the other hand is less common, and rarely significant if noted in isolation. The most common explanation by far is treatment with dopamine agonists, e.g. in use of cabergoline in patients with pituitary adenomas. While it can rarely be low in pituitary disease, in virtually all these cases other anterior pituitary hormones are affected before prolactin concentrations drop. Sheehan syndrome (post-partum pituitary necrosis) was historically probably the most common cause for females, but this is now extremely rare.

Furthermore, the lower limit is variable among individuals and can be reduced in cases of severe bulimia or very heavy smoking. These cases do not have organic pituitary/central pathology and so a low prolactin marked red with an asterisk would cause undue anxiety.

It was therefore decided that whereas a cut off for the upper limit is very important a cut off for the lower limit is clinically not warranted.

As part of on-going measures to ensure harmonisation between regional laboratories samples were distributed and tested for prolactin in the Auckland laboratories. Results demonstrated the differences between laboratories and highlighted that Labtests results (using the Siemens Centaur platform) were approximately 20% lower than other laboratories. While inter-laboratory differences in measurement are expected due to the different platforms used these differences can cause confusion if a patient is tested in a hospital and a community laboratory at different times, a very common scenario.

Therefore the upper limit for prolactin will change from 500 mIU/L to 400 mIU/L in females and from 300 mIU/L to 240 mIU/L in males to align it with other Auckland laboratories. This will help harmonise diagnosis and monitoring of patients when they are tested in different laboratories.

Numerous factors contribute to whether a patient’s prolactin result lies above or within the reference interval, including:
- Time of day (results are often 20-30% higher in the early morning, compared with afternoons)
- Pulsatile variation (which can also lead to variation of 10-20%, sometimes higher)
- Current illness or stress
- Anorexia, depression and insomnia
- Various drugs, including psychotropics, oral oestrogens, opiates and a range of others
- Chest wall/nipple stimulation (especially in women)
- Numerous other conditions including hypothyroidism, PCOS, pregnancy/lactation, and pituitary disease

For this reason a borderline result should be confirmed, after removal of temporary causes of elevation, e.g. afternoon retesting when the patient is well, preferably after at least 48-72 hrs off any drug likely to interfere.

Please note that harmonisation between laboratories is a well-established practice in clinical chemistry but it cannot be applied to all tests and it does not abolish all and every difference between laboratories. When monitoring patients on treatment; if possible on-going testing in the same laboratory and by the same platform is recommended.

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