Pentagastrin Screening Test for Calcitonin Provocation

Clinical Applications:
Clinical consultation with an Endocrinologist must precede the test being performed.

Purpose of Test:
To measure Calcitonin after pentagastrin infusion in patients suspect of having medullary thyroid carcinoma. This test is no longer used as a screening test in MEN2 kindred, with advent of genetic testing.

Patient Preparation
Fasting morning sample is preferred but not essential.

Blood samples:
Serum frozen as described. Collect 7ml blood sample in a chilled red-top venepuncture tube and allow blood to clot 1 - 4 hours at 4°C (ice bath or refrigerator). Centrifuge sample, preferably in a refrigerated centrifuge, and separate serum from cells. Do NOT use Lipaemic samples. Freeze serum immediately. Minimum volume of serum required for one estimation is 0.8ml but if dilutions are necessary more serum will be required.

Procedure:
Give: Pentagastrin dose 0.5 µg/kg given IV over 5 seconds.

Preparation of Pentagastrin:
The standard pentagastrin preparation is 250 µg/ml and can be diluted in 24ml of sterile saline to provide a solution with 10 µg/ml from which the appropriate dose is readily drawn and administered. The test is best performed with an indwelling needle and heparin lock.

Side Effects:
Patients should be warned to expect mild discomfort for the first minute or two after the injection with nausea, retro sternal discomfort and increased intestinal motility. These symptoms are short-lived and mild in degree.

Sampling:
1, 2 and 5 minutes after pentagastrin. The peak is at 1 - 2 minutes, and samples at 10 or 15 minutes are not required.

Normal Range:
The following table described the calcitonin levels of normal subjects upon stimulation studied at Nichols Institute (USA) after using the present assay:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Time</th>
<th>After Pentagastrin* Infusion</th>
<th>After combined Calcium**/Pentagastrin* infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1 min</td>
<td>2-26</td>
<td>6-82</td>
</tr>
<tr>
<td>Female</td>
<td>2 min</td>
<td>3-29</td>
<td>4-94</td>
</tr>
<tr>
<td>Female</td>
<td>5 min</td>
<td>3-23</td>
<td>5-76</td>
</tr>
<tr>
<td>Male</td>
<td>1 min</td>
<td>6-90</td>
<td>26-350</td>
</tr>
<tr>
<td>Male</td>
<td>2 min</td>
<td>10-84</td>
<td>32-350</td>
</tr>
<tr>
<td>Male</td>
<td>5 min</td>
<td>7-106</td>
<td>24-244</td>
</tr>
</tbody>
</table>

* 0.5 µg/kg/5 sec pentagastrin
** 2 mg calcium ion/kg infused at a constant rate for 1 minute, followed by 0.5 µ/kg/5 sec of pentagastrin.