Diabetes insipidus after pituitary surgery

Direct testing with Copeptin proAVP

Pituitary surgery (transsphenoidal or cranial)

Low Copeptin proAVP

(≤12h post-surgery level vs. baseline)

Diabetes insipidus

Low 12h post-operative Copeptin proAVP levels despite surgery-induced stress indicate later Diabetes insipidus. A lack of an increase of Copeptin proAVP within twelve hours after surgery indicates a deficient function of the posterior lobe of the pituitary and is therefore a reliable marker for the development of post-operative Diabetes insipidus.1

High Copeptin proAVP

(≤12h post-surgery level vs. baseline)

Uneventful course

A high 12h-post-operative Copeptin proAVP level is strongly predictive of an uneventful post-operative course in terms of Diabetes insipidus.1 In patients with an intact posterior pituitary lobe function, Copeptin proAVP levels increase due to surgery-induced stress within the first 12 hours after surgery.

![Figure 1](image1.png)

Copeptin proAVP measurements at different time points in patients before (0 hours) and after pituitary surgery.¹

<table>
<thead>
<tr>
<th></th>
<th>Pre-operative (pM, median [IQR])</th>
<th>Post-operative (pM, median [IQR])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneventful course (n=155)</td>
<td>3.92 [2.5-6.5]</td>
<td>10.8 [5.2-30.4]</td>
</tr>
<tr>
<td>Diabetes insipidus (n=50)</td>
<td>2.9 [1.9-4.7]</td>
<td>2.9 [1.9-7.9]</td>
</tr>
<tr>
<td>p</td>
<td>0.04</td>
<td>&lt;0.001</td>
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Copeptin proAVP – a promising novel tool in the early goal directed management of patients after pituitary surgery

Surgery is a stressful event known to stimulate hypothalamic stress hormone release.\textsuperscript{2,3} Maximal stress is generally experienced after extubation and it has been shown that Copeptin proAVP levels multiplied after surgical treatment (Figure 2).\textsuperscript{4}

Manipulation of the pituitary gland during neurosurgery may alter its secretory function. \textsuperscript{16-34} of patients undergoing pituitary surgery developed a post-operative Diabetes insipidus (DI).\textsuperscript{5} DI is therefore the most common cause of prolonged hospital stay.\textsuperscript{6}

Although the disease is self-limiting and benign in the majority of cases, Diabetes insipidus occasionally develops into severe hyponatraemia and hyperosmolality if the deficit of fluids is not immediately replaced. Therefore, a timely and accurate diagnosis followed by an appropriate patient management is crucial.\textsuperscript{7,8}

Copeptin proAVP, also called Copeptin, forms the C-terminal part of pre-provasopressin. Upon stimulation, vasopressin and Copeptin proAVP are released from their storage granules in the pituitary and rapidly enter the bloodstream in equimolar amounts.\textsuperscript{9,10} Thus, Copeptin proAVP can be considered a true surrogate marker of vasopressin.

![Figure 2](image.png) Copeptin proAVP (Copeptin) levels in controls, medical patients and surgical patients after extubation, mirroring three different levels of physical stress \textsuperscript{4}