The Relationship of Pituitary Hormonal Deficiencies to the Perception of Life Function Impairment in Patients with Pituitary Tumors and Diseases.

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Disclosures:
- Chiasma Acromegaly Advisory board
Background
Normal Pituitary Gland: sagittal section
Pituitary Hormone

- ACTH- cortisol
- Growth Hormone
- Prolactin
- LH/FSH- estrogen, progesterone, testosterone
- TSH- Free T4, T3
- Vasopressin
- Oxytocin
ACTH/Cortisol Deficiency

- **Cortisol** is produced by the adrenal cortex in response to ACTH.
- Prepares body for ‘flight and/Fight “ – glycogenesis, metabolism.
- Released as a **baseline level** to sustain B/P & BSL.
- Is released in response to a **threat, low blood sugar** and **low blood pressure**.

**** Essential medication (WHO)
Hypogonadism

• Inappropriately low FSH and LH levels in the presence of:
  – menstrual irregularities/amenorrhea and infertility in premenopausal woman.
  – Low testosterone in men:
    • Infertility
    • Erectile dysfunction
    • Decrease in beard and body hair growth
    • Decrease in muscle mass
    • Development of breast tissue (gynecomastia)
    • Loss of bone mass (osteoporosis)
Prolactin Deficiency

- Menstrual disorders
- Delayed puberty
- Inhibition of Lactation
- Loss of interest in sexual activity
- Infertility/oocyte maturation/spermatogenesis
- Possible role in immunoregulation
Growth Hormone (GH)

- Bone growth
- Regulatory effects on protein, carbohydrate, & lipid metabolism (midsection weight)
- Memory and concentration
- Promotes slow-wave sleep
TSH & Free T4 (Thyroid)

• Regulation of metabolic rate
• Protein synthesis
• Helps regulate long bone growth
• Neural maturation
• Increase the body's sensitivity to catecholamines
  – Body weight
  – Joint pain
  – Infertility
  – Heart disease
  – Bone density
AIM:

- Are pituitary hormonal deficiencies related to a patient’s perception of their QOL, life function impairment and current health status or are

- Other factors such as tumor size, the presence of concomitant medical conditions, age, gender or tumor type a greater influence on QoL perception.
Inclusion/Exclusion Criteria

• **Included:**

  Pts with a newly diagnosed pituitary tumor or disease.

  Ability to read and write English.

• **Excluded:**

  Pts with unstable concomitant diseases or malignancy

  Pts with one or more major life stressor, injury, illness or surgical procedure within 6 mths of presentation.
Study Design/Methods

• Prospective
• Cross-sectional
• Single site
• Convenience sample
• 205 item questionnaire
• IRB approved
Questionnaire

- Likert scale of severity dysfunction (6 pt)
- Questions adapted from:
  - Epworth Sleepiness Scale
  - Fatigue Severity Scale (Krupp 1989)
  - Eysenck Personality Inventory.
  - Beck Depression Inventory
  - Health-related quality of life (HRQoL)
  - SF36
  - Multiple Functional measures scale
  - Focus groups

Cronbach's alpha 0.93
## Results: Demographics

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
<th>Gender M/F</th>
<th>Age*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non functioning</td>
<td>56</td>
<td>24/32</td>
<td>48.7</td>
</tr>
<tr>
<td>Prolactinoma</td>
<td>30</td>
<td>4/26</td>
<td>35</td>
</tr>
<tr>
<td>Rathke's cleft cyst</td>
<td>10</td>
<td>1/9</td>
<td>42</td>
</tr>
<tr>
<td>ACTH</td>
<td>9</td>
<td>1/8</td>
<td>44.1</td>
</tr>
<tr>
<td>GH/Acromegaly</td>
<td>8</td>
<td>2/6</td>
<td>48</td>
</tr>
<tr>
<td>Lymphocytic hypophysitis</td>
<td>3</td>
<td>2/1</td>
<td>48.3</td>
</tr>
<tr>
<td>Co secreting/GH/prolactin/ACTH</td>
<td>2</td>
<td>0/2</td>
<td>41.5</td>
</tr>
<tr>
<td>Craniopharyngioma</td>
<td>2</td>
<td>2/0</td>
<td>42</td>
</tr>
<tr>
<td>Enlargement</td>
<td>1</td>
<td>0/1</td>
<td>39</td>
</tr>
<tr>
<td>Meningioma</td>
<td>1</td>
<td>0/1</td>
<td>77</td>
</tr>
<tr>
<td>Empty sella</td>
<td>1</td>
<td>0/1</td>
<td>58</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>123</td>
<td>36M/87F</td>
<td>48M/43F</td>
</tr>
</tbody>
</table>

* Mean
Overall Health Status

Question 1
Health today vs desired health

Question 2
Health today compared with 12 mths ago.
Current vs Desired QOL by Age Groups

* N=102
## Results Overall

<table>
<thead>
<tr>
<th></th>
<th>rs</th>
<th>p</th>
<th>(NS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QoL Scores &amp; # Def</td>
<td>0.02</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Gender &amp; QoL scores</td>
<td>-0.15</td>
<td>0.1</td>
<td>(NS)</td>
</tr>
<tr>
<td>Men more likely to be older</td>
<td>0.18</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Men - more deficiencies</td>
<td>0.3</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>QoL lower with more</td>
<td>0.2</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>concomitant diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low QoL &amp; Pituitary hypersecretion</td>
<td>0.5</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>
QOL Perception by Age Group

AGE/years

60-82
31-60
18-30

raw score

raw score
% Contributing Factors by Age Groups

- med Hx
- CSI
- OC
- size

18-30
31-60
60-82
<table>
<thead>
<tr>
<th>Non-Functioning Adenomas (n=74)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>QoL scores worse with # medical diagnoses</td>
<td>0.049</td>
</tr>
<tr>
<td>Older age &amp; # medical diagnoses</td>
<td>rs 0.3, p=0.010</td>
</tr>
<tr>
<td>Older age and larger tumor</td>
<td>rs 0.33, p=0.004</td>
</tr>
<tr>
<td>Males more deficiencies</td>
<td>rs 0.28, p=0.016</td>
</tr>
<tr>
<td>Females with lower QoL perception</td>
<td>rs -0.22, p=0.006</td>
</tr>
<tr>
<td>No correlation: QoL score and # Def</td>
<td></td>
</tr>
<tr>
<td>Hyperfunctioning Adenomas (n=49)</td>
<td>P value</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Larger tumor, older age</td>
<td>0.001</td>
</tr>
<tr>
<td>Older age - more medical diagnoses</td>
<td>0.049</td>
</tr>
<tr>
<td>Larger tumor more deficiencies</td>
<td>rs 0.32, p=0.024</td>
</tr>
<tr>
<td>Older males ( &gt;60yrs) more deficiencies</td>
<td>rs 0.41, p=0.003</td>
</tr>
<tr>
<td>QoL score worse with # medical diagnoses</td>
<td>rs 0.37, p=0.010</td>
</tr>
</tbody>
</table>
CONCLUSION:
In patients with pituitary tumors

- All patients perceived worsening health status/12mths
- Tumor hypersecretion, rather than # pituitary deficiencies is a better predictor of poor perceived QoL
- Men were more likely to perceive a better QoL than woman.
- Patients with pituitary dysfunction aged 31-60 are more likely to perceive poor QoL
- # Concomitant medical diagnoses, but not tumor size nor # of pituitary deficiencies was correlated with decreased in perceived QoL
Thank you. Questions?
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