Hyperparathyroid-Related Cognitive Dysfunction Improves With Surgery

BY BRUCE JANCIN

PHOENIX — Mild neurocognitive dysfunction is common in patients with primary hyperparathyroidism—and surgery provides durable improvement, according to the preliminary results of an ongoing prospective trial.

“If anything, the improvement appears to increase over time. As a result, we believe that neurocognitive symptoms should be evaluated in all patients with primary hyperparathyroidism. Depression or cognitive dysfunction should therefore be considered as criteria for referral for parathyroidectomy in patients with primary hyperparathyroidism. Current practice guidelines could be amended to incorporate these criteria,” Dr. Julie Ann Sosa said in her Joel J. Roslyn Faculty Research Award lecture at a congress sponsored by the Association for Academic Surgery and the Society of University Surgeons.

Primary hyperparathyroidism (PHPT) is a disorder of hormone hypersecretion affecting mostly women in their 50s and 60s. It results in serum hypercalcemia, which, in its more severe forms, can result in confusion, psychosis, coma, and death.

However, PHPT often initially remains asymptomatic or only mildly symptomatic for years. Widespread controversy has surrounded the role of parathyroidectomy when the disorder is detected at this stage via automated blood screening, said Dr. Sosa, a surgeon at Yale University, New Haven, Conn.

Dr. Sosa reported on 140 consecutive patients with PHPT referred to the Yale department of surgery. The control group comprised 89 patients referred for thyroidectomy for benign euthyroid disease. The groups were similar in age and co-morbidities on the validated Cumulative Illness Rating Scale.

The primary outcome measure was change in neurocognitive status as reflected in scoring on the Groton Maze Learning Test. The test is a validated measure of short-term visual/spatial memory sensitive to subclinical perseverative errors and information-processing speed. It provides two summary measures: learning efficiency, which correlates with neurocognitive measures of working memory, attention, and information-processing speed; and total errors, which correlates with the neurocognitive functions of planning and spatial memory.

Preoperatively, the PHPT group scored significantly worse than controls did on both measures. Postparathyroidectomy, however, the PHPT patients showed highly significant, progressive improvements in learning efficiency and equally robust reductions in total errors in repeat testing at 1, 3, and 6 months. (See box). Meanwhile, scores in the control group remained static. Baseline levels of intact parathyroid hormone and serum calcium weren’t predictive of postsurgical rates of improvement in learning efficiency or total errors.

Dr. Sosa’s ongoing study is largely sponsored by grants from the Association for Academic Surgery, the American Geriatrics Society, and private foundations.

Parathyroidectomy Boosts Neurocognitive Function on Groton Maze Learning Test

<table>
<thead>
<tr>
<th></th>
<th>Learning efficiency (correct moves per second)</th>
<th>Total errors (on five trials)</th>
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</thead>
<tbody>
<tr>
<td>Preop</td>
<td>0.50</td>
<td>79.0</td>
</tr>
<tr>
<td>1 month postop</td>
<td>0.61</td>
<td>62.5</td>
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<tr>
<td>3 months postop</td>
<td>0.67</td>
<td>59.6</td>
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<tr>
<td>6 months postop</td>
<td>0.69</td>
<td>53.2</td>
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Note: Based on a study of 140 patients with PHPT.
Source: Dr. Sosa

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