4. A PATIENT ORIENTED APPROACH TO PERILYMPH FISTULA

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INTRODUCTION

The diagnosis and treatment of perilymph fistula is a subject of considerable controversy and its auditory and vestibular symptoms are a quality of life issues. Depending on the severity of symptoms and the psychological profile of the patient, the disturbance can vary from a mere nuisance to total incapacitation. Further, of the four auditory-vestibular symptoms (tinnitus, disequilibrium, aural fullness, and hearing loss) the first three are totally subjective and the treating physician must rely heavily on the patient’s description of the degree of disability suffered.

The physician committed to helping the frustrated, and often incapacitated patient suffering auditory and vestibular symptoms is hampered by the difficulty in making the diagnosis of perilymph fistula short of performing exploratory surgery. This dilemma can potentially subject a number of patients without perilymph fistula to middle ear exploration while failure to explore these middle ears may mean failure to diagnosis perilymph fistula delegating patients with this disorder to prolonged and unnecessary suffering. Since neither of these two scenarios appear totally acceptable, perhaps a third is available. That scenario would be to present the patient with all the pros and cons of the surgical procedure, as well as the alternatives, once their evaluation is complete. The patient could then be allowed to participate in the decision: one which may have a substantial impact on his/her remaining quality of life.

MATERIALS AND METHODS

A prognostic paradigm for the treatment of patients with suspected perilymph fistula based on the patients chief complaint, history, and results of
TABLE I

<table>
<thead>
<tr>
<th>Predicted * of Success</th>
<th>Chief Complaint</th>
<th>History</th>
<th>ECOG</th>
<th>ENG</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 %</td>
<td>Balance disturbance</td>
<td>Antecedent trauma, straining, lifting, or barometric pressure change*</td>
<td>Abnormal</td>
<td>Normal or consistent with a peripheral lesion</td>
</tr>
<tr>
<td>75 %</td>
<td>Balance disturbance or rapidly progressive sensorineural hearing loss</td>
<td>Non-contributory*</td>
<td>Abnormal</td>
<td>Normal or consistent with a peripheral lesion</td>
</tr>
<tr>
<td>50 %</td>
<td>Balance disturbance or rapidly progressive sensorineural hearing loss</td>
<td>Antecedent trauma, straining, lifting, decrease in barometric pressure*</td>
<td>Normal</td>
<td>Normal or consistent with a peripheral lesion</td>
</tr>
<tr>
<td>50 %</td>
<td>Balance disturbance or rapidly progressive sensorineural hearing loss</td>
<td>Non-contributory*</td>
<td>Normal</td>
<td>RVR, direction fixed Positional nystagmus</td>
</tr>
<tr>
<td>25 %</td>
<td>Balance disturbance or rapidly progressive sensorineural hearing loss</td>
<td>Non-contributory*</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>10 %</td>
<td>Tinnitus</td>
<td>Contributory or non-contributory*</td>
<td>Abnormal</td>
<td>Normal or consistent with a peripheral lesion</td>
</tr>
<tr>
<td>10 %</td>
<td>Any sudden sensorineural hearing loss</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The symptom of aural pressure appears to be helpful although it is not part of diagnostic paradigm.

RVR = reduced vestibular response

TABLE II

<table>
<thead>
<tr>
<th>Predicted Success</th>
<th>Number of Patients</th>
<th>Percent Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 %</td>
<td>7</td>
<td>100%</td>
</tr>
<tr>
<td>75 %</td>
<td>44</td>
<td>80% (35)</td>
</tr>
<tr>
<td>50 %</td>
<td>42</td>
<td>62% (26)</td>
</tr>
<tr>
<td>25 %</td>
<td>15</td>
<td>53% (8)</td>
</tr>
<tr>
<td>10 %</td>
<td>12</td>
<td>53% (4)</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>67%</td>
</tr>
</tbody>
</table>

electrococchleography and electronystagmography was developed as a result of the author's personal experience (Table I)*. Percentages regarding the likelihood of oval and round window grafting providing significant symptomatic improvement were derived from the paradigm and presented to 120 consecutive patients that eventually underwent perilymph fistula surgery.

For the purpose of this paper, sudden sensorineural hearing loss is defined as that equal to, or greater than, 15 decibels in three consecutive frequencies. Further, for the purpose of this paper, a rapidly progressive sensorineural hearing loss is defined as one in which there is an annual increase in threshold of 15 or more decibels in three consecutive frequencies. In patients who presented with a sudden sensorineural hearing loss, improvement was considered significant if the hearing threshold decreased 15 decibels or more in three consecutive frequencies during the immediate postoperative period. In patients suffering rapidly progressive sensorineural hearing loss, the procedure was considered successful if the postoperative hearing threshold and discrimination remained unchanged or improved during the immediate twelve months postoperatively.

Assessment of balance disturbance and tinnitus was less objective by necessity. When the chief complaint was vertigo, if the patient experienced an average postoperative interval between spells ten times longer than the average preoperative interval they were considered to have gained significant improvement. Patients suffering less well-defined vestibular symptoms were simply asked if they experienced significant improvement, modest and is equal to, or greater than, 15 decibels in three consecutive frequencies. Further, for the purpose of this paper, a rapidly progressive sensorineural hearing loss is defined as one in which there is an annual increase in threshold of 15 or more decibels in three consecutive frequencies. In patients who presented with a sudden sensorineural hearing loss, improvement was considered significant if the hearing threshold decreased 15 decibels or more in three consecutive frequencies during the immediate postoperative period. In patients suffering rapidly progressive sensorineural hearing loss, the procedure was considered successful if the postoperative hearing threshold and discrimination remained unchanged or improved during the immediate twelve months postoperatively.
improvement, or no improvement at all, or if they were made worse. A similar line of questioning was used for tinnitus sufferers.

Of the 120 patients who underwent surgery for perilymph fistula, a 90% likelihood of significant improvement was offered to 7 patients, a 75% chance was offered to 44 patients, a 50% chance was offered to 42 patients, a 25% chance was offered to 15 patients, and a 10% chance was offered to 12 patients. Oval and round window grafting was performed in all 120 patients regardless of whether or not a fistula was identified at the time of surgery.

RESULTS

Of the seven patients offered a 90% likelihood of significant improvement, 7 (100%), achieved that goal. Thirty-five (80%) of the 44 patients offered a 75% likelihood of relief received similar improvement. Twenty-six (62%) of the 42 patients offered a 50% likelihood, 8 (53%) of the 15 patients offered a 25% likelihood, and 4 (33%) of the 12 patients offered a 10% likelihood achieved significant improvement (Table II). A number of postoperative patients complained of a temporary change in taste and oral dryness. True morbidity complications of surgery, however, consisted of only one patient who suffered a 10 decibel increase in pure tone threshold at 8000 Hz and one patient who developed an ipsilateral tympanic membrane perforation requiring later grafting. No patients experienced worsening of balance disturbance or tinnitus.

DISCUSSION

Convincing evidence exists to support perilymph fistula as a morphological and clinical entity. There is similar evidence that perilymph fistula can be responsible for auditory and vestibular symptoms including balance disturbance, aural pressure, sudden sensorineural hearing loss, progressive sensorineural hearing loss, and tinnitus. Further, there is evidence that repair of perilymph fistula can significantly decrease balance disturbance, aural pressure, and tinnitus as well as stabilize the hearing in cases of rapidly progressive sensorineural hearing loss. Hearing improvement in patients suffering sudden sensorineural hearing loss has also been noted following perilymph fistula repair.

Seltzer and McCabe (1986) reported 90% accuracy in the preoperative identification of perilymph fistula with only 10% of their cases undergoing oval and round window grafting without significant benefit. Similar results are described by Weider and Johnson (1988) and Black (1989). While such a high success rate is laudable one must wonder how many patients suffering perilymph fistula were denied exploratory surgery because they failed to meet stringent surgical criteria. One must also wonder how many of these patients with debilitating auditory and vestibular symptoms would have elected exploratory surgery rather than commit themselves to prolonged suffering had they been thoroughly counselled regarding the pros and cons of such surgery as well as the alternatives.

In this study, 69 patients elected to have exploratory surgery despite failure to fulfill the author's stringent criteria for surgery (all patients with less than a 75% likelihood of benefit). Of these 69 patients, thirty-eight (57%) have experienced significant relief of symptoms. One patient experienced a 10 decibel increase in hearing threshold at 8000 Hz and one patient developed an ipsilateral tympanic membrane perforation six weeks postoperatively as the only two surgical complications. All patients were counselled extensively prior to scheduling surgery. The likelihood of success in percentages, as outlined in the materials and methods, and the potential complications based on the author's experience were outlined. Alternatives, if available, were given. Patients were not scheduled for surgery in the office but, rather, given a written explanation reiterating the verbal consultation. Second opinions were encouraged and only then were patients allowed to call and schedule surgery. Once the operation was scheduled, a personal letter was sent to the patient describing the surgeon's impression of the patient's disability along with a repeat description of the pros, cons, and alternatives of surgery. In this letter, the patients were invited to call if questions still existed despite previous counselling.

The 38 patients who did not meet the author's stringent criteria for exploratory surgery but, following consultation elected to have surgery, are grateful for the significant relief of their auditory and vestibular symptoms. The 31 patients in which oval and round window grafting failed to bring relief of symptoms manifest a certain amount of justified disappointment but are also grateful in having been given the opportunity for relief.

REFERENCES

4) House JW, Crary WG, Wexler M. The inter-rela-
8) Meyerhoff WL, Yellin, W. SP/AP ratio in perilymph fistula. Accepted for publication in Otolaryn-Head and Neck Surg