

## COST EFFECTIVE MANAGEMENT OF THE DIZZY PATIENT

by

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### ***Introduction***

The majority of patients complaining of dizziness are seen by primary care physicians. Management strategies most often involve medication, counseling and observation. Frequently performed office lab tests, imaging and vascular studies have a very low yield in determining the cause of the patient's complaint. Vestibular evaluation appears to be the most cost effective method of determining the cause of dizziness, and also provides sensitive screening for a number of non-otologic, as well as otologic pathologies potentially affecting the patient's balance system.

The patient presenting with a primary complaint of dizziness is often a diagnostic and management dilemma for the primary care physician. Dizziness is a symptom that cannot be quantified, and a lengthy case history interview is needed to simply understand the sensation being described by the patient. The causes of dizziness can range from benign self-limiting conditions to potentially life threatening conditions. Dizziness or imbalance can occur from disruptions in one or more of the sensory systems responsible for balance. The cause may be otologic, neurologic, cardiovascular, psychiatric, orthopedic or none of the above. The Physicians Desk Reference lists dizziness, lightheadedness or related complaints as side effects for nearly 1,000 medications.<sup>37</sup>

It has been reported that patients are more likely to seek medical advice when they are unclear as to the cause of their symptoms.<sup>7</sup> Since dizziness has been notoriously difficult to diagnose and treat, imagine the confusion of the patient in choosing which specialist to consult when experiencing these symptoms. The majority of patients choose their primary care physician rather than directly seeking the advice of a specialist. In fact, less than ten percent are evaluated by an Otologist or Neurologist.<sup>35</sup>

The primary care physician must make management decisions based on the patient's history, physical examination, and the physician's knowledge of the various pathologies causing dizziness; as well as the likelihood of particular pathologies based on epidemiologic information.<sup>35</sup> This review explores previous studies regarding epidemiology of dizziness and management of dizzy patients in the primary care setting, including the yield of common diagnostic studies and the effectiveness of various treatment techniques.

### ***Impact on Society***

Various reports list dizziness as one of most common complaints in the primary care setting, and dizziness is the most common reason for a doctor visit for patients over 75 years of age.<sup>18</sup> Nearly 20% of community dwelling adults aged 60 or over reported having "suffered dizziness significant enough to result in a physician visit, taking a medication, or interfering with normal activities "a lot" within the previous one year."<sup>34</sup> In 1994, 11 million visits involving the complaint of dizziness were recorded in the United States.<sup>25</sup> Most health care practitioners are aware of the "Graying of America", and its impact on the numbers of people requiring medical attention over the next three decades. In 1984, U.S. citizens aged 65 and over accounted for 12% of the population, but were responsible for 33% of physician time, 25% of medications used, and 40% of hospital admissions.<sup>4</sup> It is estimated that this age group will grow to 18% of the population by the year 2020.<sup>40</sup>

Obviously, there are a number of possible causes for complaints of dizziness, and not all of them require extensive evaluation. A number of dizzy patients will experience resolution of symptoms without evaluation or treatment. However, Kroenke et al (1992) report that over 70% of patients presenting initially for a complaint of dizziness will not have a resolution of symptoms at two week follow up, and of those patients with persistent dizziness, over 63% reported experiencing symptoms over a period greater than three months.<sup>20</sup> In a previous study by the same author, 47% of patients complaining of dizziness were not improved after 11 months.<sup>19</sup> A recent Internet survey (*Coping with Dizziness*) indicates that 66% of respondents report suffering from dizziness for at least one year. Dizzy patients tend to be persistent in trying to find effective relief from their symptoms. The same Internet survey reveals that 38% of respondents have seen four or more physicians regarding their dizziness.

## Quality of Life

Although data published in primary care journals indicates a low incidence of mortality or institutionalization associated with the complaint of dizziness,<sup>35</sup> very little literature addresses the impact that persistent dizziness may have on quality of life and emotional well being. It has been reported that dizziness has a greater impact on quality of life and functional abilities than many other chronic conditions. Grimby and Rosenhall (1995) report that when comparing elderly patients with dizziness to elderly patients without dizziness, dizzy patients:

1. consistently rate their quality of life lower,
2. consume significantly more medications, and report experiencing falls more often.<sup>13</sup>

One quarter of these subjects with dizziness reported that "suffering from dizziness interfered with daily life." Clark et. al. (1993) report that "patients who present to a physician complaining of dizziness have significant disability and decreased quality of life."<sup>7</sup> Newman and Jacobson (1993) offer the following explanation for the dramatic effect even intermittent dizziness can have on the daily life of the balance disordered patient:

"Frank spells of vertigo in public may cause patients to change their occupation (e.g. a painter who must climb tall ladders), restrict their mobility (a person may stop driving a car for fear of endangering the life of another due to the unpredictability of the onset of dizzy episodes), cease leisure activities with friends or family (e.g., for fear of ruining an otherwise pleasurable activity by becoming suddenly or violently ill), stop necessary household activities such as food shopping (e.g., due to the possibility of becoming ill and incapacitated in a public place), and become housebound in the most severe cases. It has been our observation that unlike other disorders (such as hearing loss) that might require numerous negative experiences to cause a change in behavior, dizziness and vertigo attacks may need only occur a few times before a patient might change his or her normal daily routines. Unlike other disorders such as tinnitus and hearing loss that are more or less constant, vertigo is usually unpredictable and when it occurs leaves the patient with a feeling of helplessness."<sup>26</sup>

Patients with complaints of dizziness are reported to have higher levels of anxiety,<sup>2</sup> higher incidence of panic disorder<sup>6</sup> and a higher likelihood of agoraphobia and social avoidance behaviors than non-dizzy subjects.<sup>38</sup>

## Falls and Hip Fractures

Falls are a serious health problem, and are the leading cause of injury in the elderly population. Over 200,000 falls leading to hip fractures are recorded in the United States each year. The cost of direct care for hip fracture patients is over seven billion dollars annually.<sup>1</sup> Additionally, many of these fallers are placed in long term care facilities, creating enormous indirect health care costs. Dysequilibrium and fear of falling are common complaints in the elderly population. Fife and Baloh (1993) report a correlation between vestibular dysfunction and complaints of dysequilibrium in this age group.<sup>11</sup>

## Current Management Trends

As stated earlier, the vast majority of dizzy patients are seen and treated by primary care and general internal medicine physicians.<sup>35</sup> A prospective 6-month study performed in 1993 revealed the management strategies employed by primary care physicians when dealing with a patient presenting with a complaint of dizziness. These strategies are listed in Table 1.

N = 140
Office Laboratory testing – 33.6%
Advanced testing – 11.4%
Referral to a specialist – 9.3%
Medication – 61.3%
Observation – 71.8%
Reassurance – 41.6%
Behavioral recommendations – 15.0%

**Table 1.** Management strategies employed by primary care physicians when dealing with a patient presenting with the complaint of dizziness. (Sloane PD, Dallara J, Roach C, Bailey KE, Mitchell M, McNutt R. (1994). Management of dizziness in primary care. *J Am Board Fam Prac* 7:1-8.)

Even though the most common final diagnosis in this group was otologic (nearly 50%), only three patients were referred for otologic studies (2 audiograms, and 1 ENG exam). More than 10% of these patients were referred for neuro-imaging or vascular studies. Previous studies indicate that vestibular dysfunction is the primary cause of dizziness in the majority of patients seen for dizziness in the primary care setting.<sup>20,9</sup>

These management trends indicate that primary care physicians appear to be more focused on potential mortality as opposed to the patient's quality of life. A quote from this study "Management of Dizziness in Primary Care" may provide insight as to the primary care approach; "Physicians tend to treat more conservatively the more classic symptoms of vertigo, which often have self limiting causes, and to conduct more investigation when neurologic or cardiologic diagnosis was suspected."

A point by point examination indicates that available data does not support these management decisions as cost-effective approaches to the dizzy patient. Earlier in this review we discussed data that indicates that observation and reassurance may not be appropriate for the majority of patients seeking relief from persistent, bothersome dizziness. In fact, most patients do not resolve spontaneously or within a two-week period. In regards to office based lab tests, Kroenke et al (1992) performed comprehensive medical and neuro-otological evaluations, as well as structured psychiatric interviews on 100 patients presenting to primary care settings with complaints of persistent dizziness. Lab tests consisted of: "complete blood count, a 20 item screening chemistry panel, thyroid function tests, and electrocardiographic evaluation." Their conclusion was that these lab tests "were not useful in establishing a cause" for the patients complaints.<sup>20</sup>

Behavioral recommendations for 15% of patients appears to be consistent with previous reports of psychologic/psychiatric factors associated with dizziness.<sup>20</sup> The issue of whether anxiety and panic disorder are the result of vestibular pathology; or whether complaints of dizziness are associated with psychiatric disturbance, remains unresolved. It is suspected that certain personality types may be more inclined to develop psychiatric disorders as a result of chronic illness. Research has demonstrated that psychiatric conditions, particularly depression, result in increased likelihood that patients will seek medical attention for somatic symptoms.<sup>7</sup> A common anxiety disorder leading to complaints of dizziness is hyperventilation syndrome. Two separate studies report that hyperventilation contributes to dizziness in 21 to 25% of patients, and is the sole cause in 4 to 5%.<sup>29,9</sup> Sama et al (1995) estimates that 65% of cases of hyperventilation are purely psychogenic.<sup>29</sup>

## **Medications**

Medications are prescribed for 61 to 89 % of patients seen for dizziness in the primary care setting.<sup>35,36</sup> This treatment appears to be beneficial to a minority of patients. Kroenke et al (1990) report that only 31% of patients receiving medication for dizziness found it helpful.<sup>19</sup> In addition, meclizine, the most commonly prescribed medication for dizziness, has significant side effects that may put the balance-disordered patient at higher risk for falling. Manning et al (1992) report that meclizine caused a significant reduction in mental performance tasks and reaction time, as well as increased levels of drowsiness when compared to placebo.<sup>24</sup>

Vestibular suppressant medications are frequently used for complaints of dizziness. During the acute phase of vestibular dysfunction (typically lasting 3 to 5 days), vestibular suppressants are helpful in reducing activity in the vestibular nuclei and cerebellum. It is the tonic asymmetry in activity in these areas that create the acute symptoms of vestibular induced vertigo. In order for natural or therapeutically enhanced compensation to take place, the brain must eventually be made aware that an asymmetry exists. There is general agreement that vestibular suppressant or centrally sedating medications inhibit this compensation process.<sup>41,33,5</sup> Alternative medical treatment strategies include the use of anti-emetic medications which treat the vegetative symptoms with lesser sedating effects, or eliminating the use of sedating medications after 3 to 5 days.

## **Imaging**

"Balance disorders are common, while brain tumors are rare. An isolated balance disorder is thus rarely the presenting symptom of a brain tumor. Nonetheless, some patients with balance disorders worry about having a brain tumor, and some physicians, particularly in countries infested with lawyers, worry about missing a brain tumor."<sup>16</sup> This quote by Hirose and Halmagyi (1996), both practicing neurologists outside of the United States (Japan and Australia, respectively), eloquently sums up the trend of ordering cranial MRI scans for patients presenting with dizziness, despite data indicating this to be an extremely ineffective use of health care dollars. Two points need exploration: 1. The likelihood that MRI scanning will provide relevant diagnostic information, and 2. The sensitivity of less expensive, more diagnostically useful tests which are highly sensitive in picking up patients ultimately requiring MRI scanning.

Gizzi et al, in their article "The Diagnostic Value of Imaging the Dizzy Patient" (1996), make the point that conditions such as cerebrovascular disease, demyelinating disease and intra-cranial masses typically present with central nervous system findings in addition to the complaint of dizziness.<sup>14</sup> Diagnosis of otologic causes of dizziness, such as Menieres' disease, labyrinthitis or Benign Paroxysmal Positional Vertigo, is typically not helped by imaging studies. They postulate that MRI scanning for patients with no CNS signs is only helpful in the evaluation for acoustic neuroma, and that this diagnosis in the presence of symmetrical hearing is extremely rare. Based on their statistical analysis regarding epidemiology of acoustic neuroma, they report the probability of a positive finding in a dizzy patient with no CNS signs and symmetrical hearing to be one in 9307. Based on the average cost of a MRI scan with contrast, which is estimated at \$1200,<sup>3,23</sup> the cost of finding one acoustic neuroma in this population would be \$11,168,400. When the criteria for scanning is simply changed to only include patients with asymmetric hearing loss, the probability of a positive finding increases to one in 638, representing a projected cost of \$765,600. Vestibular evaluation typically includes audiometric evaluation and auditory evoked potential tests, which are 94 to 98% sensitive for identifying acoustic neuroma.

It is acknowledged that there are reasons other than acoustic neuroma to perform MRI scanning on dizzy patients. MRI scanning can provide evidence of multiple sclerosis, cerebral atrophy and/or ischemia, although less costly screening MRI exams (fast spin echo) are not sensitive to these conditions.<sup>3,30</sup> Most CNS lesions related to dizziness are located in the cerebellum or brainstem.<sup>27</sup> When preliminary history, examination and diagnostic tests indicate the suspicion of CNS involvement, MRI scanning becomes very cost effective. Ojala (1988), using history, Electronystagmography, Auditory evoked potentials, EEG and Cerebrospinal fluid studies to screen patients before ordering MRI scanning, found that 40% of patients scanned had findings relevant to their complaints of dizziness.<sup>27</sup> It is noted that vestibular evaluation typically includes examination of ocular motility abilities. The sensitivity of ocular motility testing for cerebellar disorders has been shown to be very high.<sup>15, 21</sup>

### **Vestibular Evaluation**

Vestibular evaluation typically consists of a battery of tests (see Table 2) designed to determine the site of lesion and functional abilities of the patient. It is important for the referring physician to keep in mind that a thorough vestibular evaluation, in addition to evaluation for otologic pathology, provides a sensitive screening for cerebellar disorders, acoustic neuroma, hyperventilation syndrome, and a variety of other conditions known to cause dizziness and instability.

History interview by a specialist trained in dizziness and balance disorders	Subsequent evaluation proved provisional diagnosis by history alone correct 76% of the time when performed by an experienced examiner <sup>20</sup>
Audiometric evaluation	Provides evidence of a variety of otologic disorders
Ocular motility testing	Sensitive screening for cerebellar dysfunction (i.e., CVA, multiple sclerosis, intra-cranial mass)
Positional testing	Nystagmus patterns suggestive of peripheral vestibular pathology vs. vascular insufficiency or cerebellar dysfunction
Caloric stimulation	Lateralizes end organ or VIIIth nerve pathology
Rotational tests	Most sensitive test of vestibular ocular reflex function
Posturography	Assess patients functional postural stability
Auditory evoked potentials ABR / EchoG	Rule out acoustic neuroma, screen for demyelinating disease and endolymphatic hydrops
Otoacoustic emissions	Separates cochlear from neural site of lesion

**Table 2** Vestibular evaluation test battery

### **Treatment**

Treatment approaches to the dizzy patient include medication, counseling, surgery and vestibular rehabilitation. Medications and counseling have been shown to be ineffective for the majority of chronically dizzy patients. Surgery is applicable only to unstable labyrinthine conditions such as Menieres' syndrome and perilymph fistula, progressive lesions such as acoustic neuroma and vestibular schwannoma, and is appropriate on rare occasions for intractable benign positional vertigo. These conditions represent a minority of dizzy patients.

Vestibular rehabilitation and Canalith Repositioning Procedures have been proven to be effective in providing relief from chronic dysequilibrium, and motion and position provoked vertigo.

Horak et al (1992) demonstrated "relative effectiveness of vestibular rehabilitation, general conditioning exercise, and vestibular suppressant medications." After six weeks, only the vestibular rehabilitation group showed significantly improved performance on balance function tests.<sup>17</sup> Shepard and Telian (1995) report that 84% of chronic vestibular patients reported complete or dramatic relief following a customized vestibular therapy program.<sup>31</sup> Numerous reports provide sufficient evidence that vestibular rehabilitation provides a greater amount of relief to a greater number of dizzy patients than any other treatment method.<sup>8, 12, 39</sup> Efficacy of canalith repositioning for benign paroxysmal positional vertigo has been widely reported to be around 90%.<sup>8, 10, 22, 28</sup>

## Conclusion

Patients seen in the primary care setting for dizziness are often observed, medicated or referred for expensive neuro-imaging studies. The effectiveness of these treatment strategies and the yield of neuro-imaging appear to be sufficiently low to consider alternative management techniques. Vestibular evaluation has been shown to be highly sensitive for cerebellar disorders as well as more common vestibular pathologies. The cost of vestibular evaluation and treatment for the majority of dizzy patients is less than the cost of a single MRI scan with contrast. While some patients will improve without evaluation or treatment, the available data indicates that it is more cost effective to refer dizzy patients (without accompanying CNS signs or symptoms) for vestibular evaluation before ordering imaging or vascular studies, or prescribing medication for longer than two weeks duration.

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