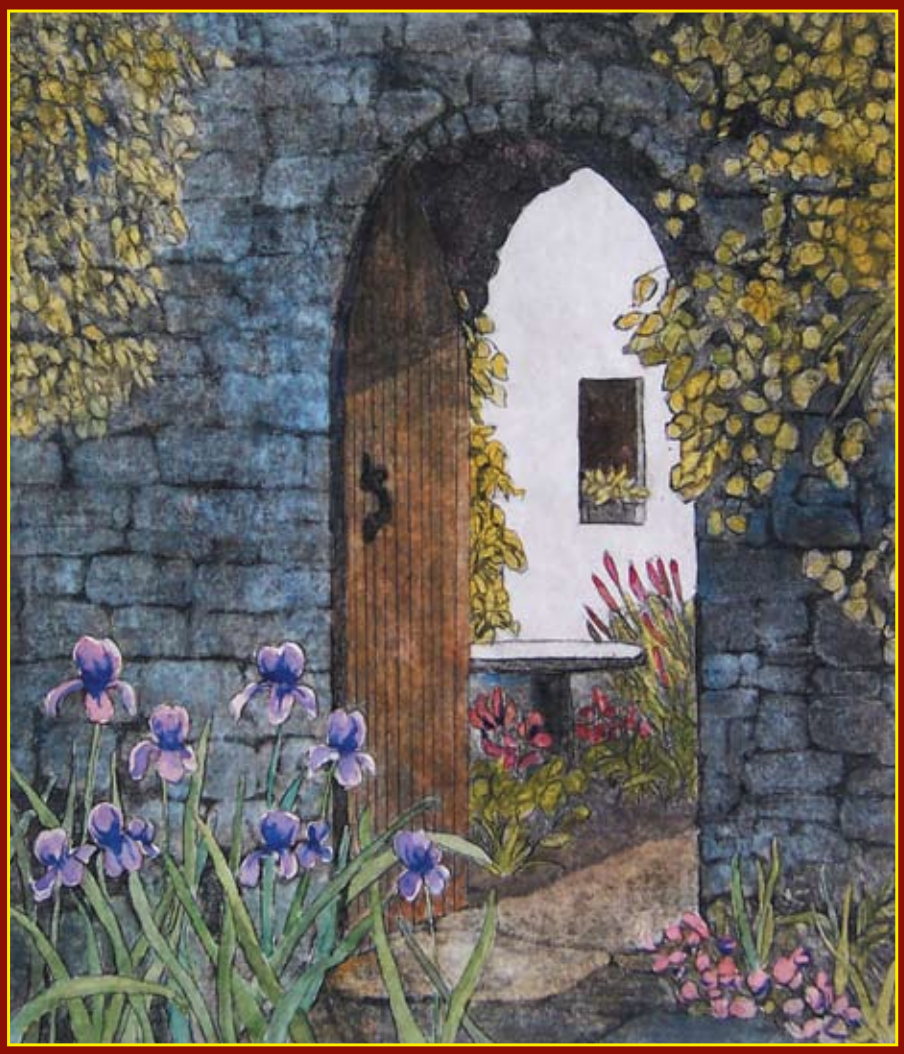
Volume 95 No. 3 March 2012

Medicine & Health
RHODE ISLAND



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Part I

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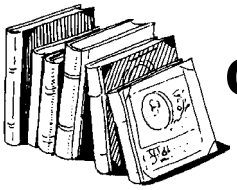
Medicine & Health RHODE ISLAND

VOLUME 95 NO. 3 March 2012

PUBLICATION OF THE RHODE ISLAND MEDICAL SOCIETY

Medicine and Health/Rhode Island *(USPS 464-820), a monthly publication, is owned and published by the Rhode Island Medical Society, 235 Promenade St., Suite 500, Providence, RI 02908, Phone: (401) 331-3207. Single copies $5.00, individual subscriptions $50.00 per year, and $100 per year for institutional subscriptions. Published articles represent opinions of the authors and do not necessarily reflect the official policy of the Rhode Island Medical Society, unless clearly specified. Advertisements do not imply sponsorship or endorsement by the Rhode Island Medical Society. Periodicals postage paid at Providence, Rhode Island. ISSN 1086-5462. POSTMASTER: Send address changes to Medicine and Health/Rhode Island, 235 Promenade St., Suite 500, Providence, RI 02908. Classified Information: Cheryl Turcotte/Rhode Island Medical Society, phone: (401) 331-3207, fax: (401) 751-8050, e-mail: cturcotte@rimed.org. Information on permissions and reprints available from jdteehan@rimed.org.*

Note: *Medicine & Health/Rhode Island* appears on www.rimed.org, under Publications.



Commentaries

How Much Is it Worth?

I HAVE BEEN IMPRESSED RECENTLY WITH THE medical treatment "breakthroughs" being announced in the newspapers. Just the week before I wrote this, a new drug was shown to extend life in men with metastatic prostate cancer by three months. The newspapers, although not quite rapturous, nevertheless were enthralled. Several doctors, undoubtedly world famous experts, judging by their clinical appointments, were quoted about this "major advance." Not only that, but two other drug companies had similar drugs that would likely show similar efficacy. A month prior I saw an article about another breakthrough, for metastatic melanoma, which, like the prostate drugs, extended life by three months, although only for people whose tumor had a particular genotype.

Last week the *Wall Street Journal* denounced the Food and Drug Administration for denying approval for Avastin for metastatic breast cancer on the grounds that the FDA commissioner was biased, and that the review panel was the same as the one that had recommended a review of the data, hence also biased. Their point seemed to be that drug companies needed protection, not patients. Efficacy and safety were less important than profit.

In a world where the difference between placebo and efficacy may be microscopic, but the cost is increasingly outsized, where will it all end? We have ever-more costly drugs, producing increasingly small benefits. We have come to embrace the drugs for Alzheimer's disease despite their minimal benefits and costly price tags. We rush to do carotid endarterectomies for asymptomatic stenosis although we have to do about 50 operations to prevent one stroke, and that rate applies only if the surgeon is top rate.

As time passes and advertising campaigns sink in, we become increasingly steeped in the hype, which feeds our egos, that doctors actually can do something in situations we'd previously believed were hopeless. In the book, *The Thirteen Clocks*, by James Thurber, an apocryphal story is told in which the character explains to his friends that he started the rumor that created a gold rush in some distant land. "But you went, too!" his friend remarked. "Yes. I was convinced that the rumor was true since so many people were going there." Doctors, who were undoubtedly as smart and talented as those practicing today, practiced blood letting for thousands of years.

These new drugs, as appropriately pointed out, are not cheap. The investment in development may be over a billion dollars. The cancer drugs often cost $5,000 or more per month. The release of a new drug for multiple sclerosis is actually leading to an *increase* in the cost of its competitors, as each seeks to compensate for its loss of market share. Adam Smith spins in his grave. Of course this doesn't affect those who lack drug insurance since they can't afford these drugs anyway. It does make them and their families feel badly, though. Imagine the parents who can't afford to buy a drug for their terminally ill child, or the adults who can't afford the payments for the father's prostate cancer medication?

How much is a life worth? There are standard tables for figuring this out for personal injury suits. If you're still working and have a high paying job you're life is worth a lot, whereas a child's has no financial value, similar to a retired person. But how can we really attach a value to a life? There is, of course, no way. "Value" and "money" are not interchangeable. Drug insurance varies wildly from plan to plan, and a co-pay of $40 for a brand name may be a bad deal for cheap drugs, but terrific for a $5k whopper, whereas a 20% co-pay is good for the cheap drug but prohibitive for the mega-cost drug. Most patients pay a very large percentage of their disposable income, often far beyond their disposable income, to pay their share for these medications. Everyone feels badly when they can't afford them but get them anyway, or simply have to decline.

As drugs increase in price and their price to efficacy ratio approaches infinity, perhaps we can propose a deal between the insurer and the patient. If the patient chooses to decline the expensive drug to increase his survival by three months, he gets to keep half the savings in the drug cost. Thus, the patient chooses between a little extra cash to leave his family, if we make the deal contingent on his death, or to use himself. My guess is that a very large percentage of mortally ill people will choose to leave money rather than spend it on medications that delay their exit only a little bit.

– Joseph H. Friedman, MD

Disclosure of Financial Interests

Lectures: Teva, Ingelheim Boehringer; General Electric

Consulting: United Biosource; Bubaloo, Halsted, Reitman LLC; EMD Serono; Genzyme; Teva; Acadia; Addex Pharm; Schwarz Pharma

Research: MJFox; NIH: Cephalon; EMD Serono; Teva; Acadia

Royalties: Demos Press

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The Decline and Fall of the Neighborhood Drugstore

The neighborhood pharmacy, some eight decades ago, was the cornerstone of the urban community; and when all else failed (as did so many retail enterprises in the Depression year of 1933, including the local bank), the pharmacy—called the corner drugstore—stood as a fortress against all adversity, a steadfast reminder that some things in life do not change. Other retail stores, the survivors of the economic decline, occupied sundry positions on the street but the corner, approachable from two streets, seemed to have been expressly reserved for the drugstore (in 1933, the word, drug, carried a more restricted, more benevolent meaning).

The functions of the neighborhood drugstore were at least five in number: First, to fill all of the prescriptions, written in strange Latin abbreviations, brought with trembling hands by neighborhood people. Second, to provide answers to profound questions about the intimate details of health and disease; (it should be remembered that the pharmacist was always called, "Doc.") Third, to provide, in stealth, medically-related items to selected adults, but only those who were trustworthy, items such as condoms or spermicidal douches. Fourth, to offer access to a public telephone booth within the drugstore for the neighborhood community, most of whom were without home-based telephones. And lastly, to provide a congenial meeting place for the neighborhood youth, a joyous venue called the drugstore counter where young people might convene for such spirited endeavors as sharing an ice-cream soda or banana-split. It was a convenient venue before the roadside taverns had been invented.

The drugstore created a mutually appreciated geographic locus for the community. When one uttered, "Meet me at the drugstore," there was no ambiguity, no doubt as to where the meeting should take place.

The drugstore, then, was much more than a mercantile contrivance for pharmaceuticals. In a time of instability, the drugstore remained a stable entity, the community's emotional center. The drugstore was, in the words of Marcus Aurelius 121 – 180, CE), "Like a promontory of the sea, against which, though the waves beat continually, yet it both itself stands, and about it are those swelling waves stilled and quieted." It was an intensely important community resource that offered life-saving medications, common hygienic products, carbonated drinks; and most of all, earnest advice.

And the role of the pharmacist (then called the druggist)? The druggist—almost all were middle-aged males—was college-educated with a prominently displayed diploma suspended above the counter. Typically, he was bilingual; speaking Italian in Italian-speaking neighborhoods; and in the Jewish neighborhoods, a vernacular Yiddish.

The nature of street-level mercantilism has changed drastically since World War II. Stores, that had once confined themselves to a narrowly defined domain of the retail market, have now expanded indiscriminately, invading the precincts of other retail stores. And thus the butcher shop sells fruits and vegetables as well as meat; the former candy store has become an emporium vending everything from nostrums to containers of milk; and the drugstore, no longer identifying itself as the neighborhood pharmacy, has foresworn its role as the intimate neighborhood drugstore and has lost its human identity becoming but one of many nationwide department stores selling everything imaginable from cosmetics to artisanal wines to Christmas trees; and, incidentally, prescription-based pharmaceuticals.

And the soda counters of the old drug stores, selling alcohol-free fluids to youngsters newly learning the time-worn intricacies of social dating? The counters with their circular stools, have largely disappeared, while the social behavior of the late-adolescent population has similarly been transfigured in ways not fully understood.

Nostalgia for the "old neighborhood stores," quaint perhaps in their rotogravure reminiscences, is merely another subterfuge for a reluctance to accept the fundamental changes that have transformed the world of retail commerce. The Mom and Pop stores, embellished and preserved in fiction, have been replaced by transnational enterprises repeated endlessly in American shopping malls and in countless urban centers of the world. Citizens of Moscow and many other global villages now know Macdonald's as well as do the children of the Kansas prairies.

Both the retail establishments of America and even its language have become global. There is a current story of a tourist from New York visiting China. She feels isolated as she travels in a Chinese train. In her reveries, she sneezes; and a stranger sitting next to her exclaims, "Gesundheit!" And the woman replies: " Oh, I'm so happy to hear English spoken!"

– Stanley M. Aronson, MD

Stanley M. Aronson, MD is dean of medicine emeritus, Brown University.

Disclosure of Financial Interests

The author and his spouse/significant other have no financial interests to disclose.

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Introduction to The Aging Brain, Part 1

Joseph H. Friedman, MD

On November 9, 2011, a CME course was held in Providence on the Aging Brain. The papers in this and another issue to follow contain summaries of the talks given. All physicians, excepting pediatricians deal with elderly patients, and are doing so at increasing rates. In addition, of course, we are all aging ourselves. As Houston Merritt, MD, one of the great neurologists of the twentieth century, and ex-Dean of my medical school, commented to a group of medical students many years ago, "When it's very quiet, I can sometimes hear the splash of the cortical neurons falling into one of my cerebral lacunes." Unfortunately hearing doesn't do well with aging either, but we won't go into that here.

The study of clinical aging is challenging because it becomes increasingly difficult to distinguish "normal" from pathological aging. One of the articles focuses on the "normal" changes seen by a pathologist in the non-disease brain. Our esteemed founding dean, Dr. Stanley Aronson, almost 90 years old, takes on the topic of successful aging, in addition to continuing his weekly columns in the Pro Jo, now exceeding 1000. We discuss the clearly pathological, seizures, stroke, depression, gait disorders, and included one on the contentious topic of normal pressure hydrocephalus. Dementia, undoubtedly the worst problem of the aged, gets the most attention with articles about testing, imaging, behavior and nosology. Driving and caregiving, "para-medical" problems, which probably are more important than almost all other issues to the patient and family, are addressed as well.

I hope these articles are as well received in print as the lectures were in life.

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Disclosure of Financial Interests

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Consulting: United Biosource; Bubaloo, Halsted, Reitman LLC; EMD Serono; Genzyme; Teva; Acadia; Addex Pharm; Schwarz Pharma

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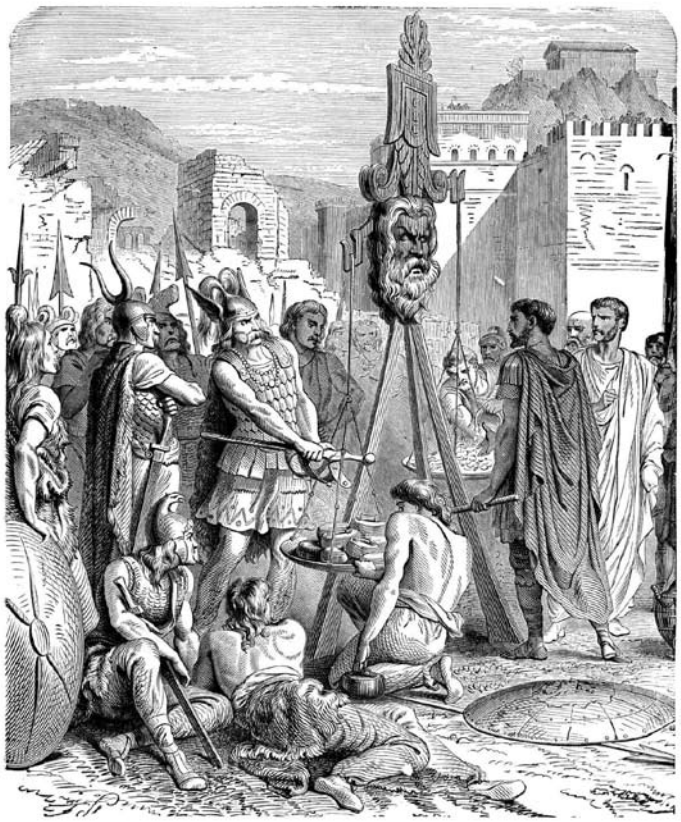

Geriatric Neurology Conference, November 2011: It Is Time To Be Old

Stanley M. Aronson, MD

In November of 2007, some four years ago, a conference on the ethical dimensions of geriatric neurology had convened also in Providence. I was privileged to participate then. And in seeking to define responses to the problems of the impaired elderly, I told about the Inuit custom (probably apocryphal) of placing their old ones on ice floes and allowing them to float off into the Eskimo equivalent of oblivion.

Now, four years later, I can no longer use this arctic legend, for three compelling reasons: First, urban civilization has now enriched the Inuit territory and there are, currently, clusters of nursing homes for their elderly on the shores of Hudson's Bay. Second, Medicare no longer underwrites the cost of ice-floe rental. And third, global warming has sharply reduced the number of accessible ice floes.

Accordingly, I've discarded this Inuit tale as my metaphor for the insoluble problems confronting the neurologically-impaired elderly. And so, seeking another analogy, I suggest that the senior decades of life were much like the final, adagio, movement of Haydn's 45th Symphony, often subtitled, The Farewell Symphony. You will recall that as the adagio slows to a lingering elegiac melody, the musicians—one at a time—blow out their music-stand candles and quietly depart from the stage; and so the symphony ends unpretentiously, reflectively, with but two violinists slowly repeating, as though it were a requiem, the simple autumnal theme. Not exactly like Dylan Thomas's recommendation, "Do not go gentle into that good night." But then, that Welsh poet rarely did anything gently.

This progressive reduction in human resources, in aging, is also reminiscent of Shakespeare's distillation of the aging process in his play, *As You Like It*. In a memorable speech beginning with the words, "All the world's a stage," he defines the seven stages of man, ending with the last, a second childhood with voice transforming to a childish treble and the imminent prospect of a sepulchral limbo "sans teeth, sans eyes, sans taste, sans everything." Shakespeare was but 36 years old, barely toilet-trained, when he composed those memorable phrases. What could he possibly know of the many 'sans' of the senior years ? The loss of teeth is trivial when compared with the loss of such blessings as: memory, vitality, relevancy, companionship and a limitless moral horizon.

Shakespeare seemed beholden, in so many of his plays, to proclaim the dimensions of senescence. He lingered, lovingly, over sundry displays of elderliness. In *Henry IV*, he gives the chief justice the following memorable sermon:

> "Old Age Have you not a moist eye, a dry hand, a yellow cheek, a white beard, a decreasing leg, an increasing belly? Is not your voice broken, your wind short, your chin double, your wit single, and every part of you blasted with antiquity…"

Life, in each of its phases (whether or not they be of seven compartments) certainly consists of distinguishable characteristics: Our youthful years, filled with consummate ignorance, arrogance, passions—unrequited or fulfilled; our adult years characterized by wit, commitment, resolution and sometimes triumph; and our elder years, draped in hiburnian grey with a sense that everything is contracting, shrinking; where things had once been supple and yielding, they now are fragile, friable and turning a disagreeable yellow. We end by whispering to each other: If youth but knew; if age but could.

In our inarticulate youth, we do rather than talk; talking, after all, is the chronic ailment of the aged. And we talk, to console ourselves for our incapacity to commit those vices that we now righteously condemn.

We confront a fundamental, perhaps remorseless, observation: we learn that aging is a collective, unidirectional phenomenon of life, a progressive accumulation of biological detritus, from progressive loss of neurons to deterioration of the articular surfaces of our functional joints. It is a woeful tale of the gifts of life gone west.

My function this morning is to share with you one observation which runs contrary to this otherwise relentless tale of organic deterioration. In 1973, a retrospective study was undertaken to determine the age-related frequencies of a number of neurodegenerative processes in about 8,000 consecutive autopsy examinations of adult brains. As a criterion of neurobiologic senescence, the degree of neurofibrillary and granulo-vacuolar degeneration within hippocampal neurons were measured.

The result? There is a progressive increase in the relative frequency of these degenerative cytoplasmic changes in patients through their late 80's; but the specimens of those dying beyond age 90 show, instead, a marked *decrease* in these senescent lesions.

How to interpret this ? Possibly a statistical artifact, although the numbers examined are impressive—and given the paucity of post-mortem examinations today, it is unlikely that a comparative series might be assembled. A second interpretation: That there exist genetic differences such that one group (perhaps the majority of the population) is vulnerable to the progressive weight of neurocellular deterioration, a group by and large exhausted by the force of mortality by age 90; and another group, by virtue perhaps of some genetic variance, is less susceptible to the depredations of the organic dementias. Paraphrasing this: If, on the one hand, **Alzheimer's disease** (**AD**) is nothing more than the cumulative ravages of a lamentable accumulative process affecting all humans, then—each year beyond, say, 60, should show an increased incidence of neurobiologic degeneration. If, on the other hand, there exists amongst us a dementia-resistant subset, we would expect such individuals to begin to show up more readily beyond the age, say, of 90.

We have only anecdotal evidence, from the various dementia clinics that while AD may extent into one's nineties; rarely does it seem to *start* beyond that age.

Thus, if this 1974 observation is representative of the age-related epidemiology of Alzheimer's disease, then I am the bearer of wonderful news: if you have no cognitive loss at age 90, the chances of then developing AD is very, very small. As a 90 year old, I find this a comforting observation; somewhat diminished in impact, admittedly and perhaps soberingly similar to being told reassuringly that 90 year old males never develop primary urethral gonorrhea. Illusions are reserved for children and Red Sox fans. At age 90, if nothing else, it is time to be earnest.

This being New England, let me end by sharing something of the life of Ralph Waldo Emerson, the sage of Concord, perhaps America's most authentic voice—and, in the end, a victim of AD.

Young Ralph was born to a patrician family that cherished education yet was visibly proud of its genteel poverty. He attended Harvard College, paying his tuition by working as an errand boy. By virtue of his later attendance at Harvard's Divinity School, he was ordained in 1826 and appointed as pastor to Boston's Unitarian Church. These were stressful years for Emerson, plagued then with chronic lung disease (probably tuberculosis), requiring periodic intervals of bedrest.

After 1832, when Emerson's wife died, he abandoned a career as clergy, particularly so since his transcendental views on sin, grace, ritual and individuality were at marked variance with the established views of the church. He then embarked upon an extended tour of Europe, developing enduring friendship with Wordsworth, Coleridge and Carlyle. And from 1833 forth, he devoted himself to a career as a secular writer and lecturer.

His life, by outer appearances was "New England-plain" and well ordered. He paid his taxes, tutored his children and cultivated his garden. But these years of domesticity were also years of spiritual and intellectual ferment. He found much inner strength within himself; and others, increasingly, looked to him and his serene composure, as a beacon of insight and stability.

To those approaching 90: be confident—it looks better than being confused or uncertain.

The year 1872 was a turning point in Emerson's life. He now experienced an unexpected obstacle: a gradual deterioration in his rhetorical faculties. Where formerly he had great ease in talking with neither notes nor preparation, he now encountered grievous problems in fashioning sentences—or even finding the appropriate noun. A poem, written perhaps more as a personal memorandum than as a poem, demonstrates clearly than he was fully aware of his cognitive deficits.

It is time to be old,
To take in sail:
The god of bounds,
Who sets to seas a shore,
Came to me in his fatal rounds,
And said: "No more !"

By age 70, Emerson had given up writing, declaring that "his pen refused to spell." The terminal lines, perhaps the culmination of his life's eventful voyage, read as follows:

The port, well worth the cruise,
is near,
And every wave is charmed.

His was a life "well-worth the cruise" where "Every wave is charmed," And in the end—although he no longer recognized himself—he was at peace. (Oh, that this were so for the multitude of our elderly whose faculties have been wrecked on the shoals of dementia, whose identities have been stolen, and whose very purpose in life has been misplaced somewhere in a disarray of yesterdays.)

To those approaching 90: be confident—it looks better than being confused or uncertain. And, of course, be ebullient; perhaps not the uncompromising facetiousness of syphilitic dementia, but an insouciance appropriate to your age.

And what impediments will challenge you ? First, a geriatric existentialism, a form of nihilism that denies any reality beyond a radius of ten meters. Certainly, then, a compassion-fatigue—a response to the overwhelming human wreckage that abides about us. And, necessarily, also, a survivor-guilt, being both alive and communicative.

And finally, a recognition that of the numberless cognitive faculties that are failing, if but one persists—humor—it is sufficient.

– Stanley M. Aronson, MD
October 3, 2011

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Disclosure of Financial Interests

The author and his spouse/significant other have no financial interests to disclose.

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"Normal" and Pathological Changes with Age in the Brain

John E. Donahue, MD

Classical studies attempting to describe changes in the aging brain, such as cortical atrophy and reduction of neuronal number, may be inaccurate due to inclusion of brains with preclinical or early changes of neurodegenerative diseases such as **Alzheimer's disease (AD)**. AD pathologic changes, neuritic plaques and neurofibrillary tangles, are frequently seen in brains over 60 years of age, particularly in the most vulnerable areas, such as hippocampus and entorhinal cortex. If these changes represent preclinical AD, as opposed to the normal physiology of aging, then this will have a significant impact in the analysis and interpretation of earlier literature on aging.[1]

There are macroscopic changes in the aging brain that are almost universally seen. Thickening of the arachnoid and prominence of the arachnoid granulations in the meninges are present. Increased ventricular volume is seen. Variable degrees of cortical and white matter atrophy have been reported.[2] The degree of cortical (gray matter) atrophy must be interpreted with caution because of the potential inclusion of preclinical diseased brains in older studies, as mentioned above. Brain weight is reported to decline by several percentage points per year after the seventh decade; however, only minor gray-matter alterations have been noted if there is no cognitive decline in the patient.[3] White matter lesions are very common in older brains, such as reduced volume and increased T2 signal on MRI, but their clinical significance is unclear.[4] Vascular lesions are also common in aging brains, such as atherosclerosis and lacunar infarcts; however, these tend to be considered pathologic and not part of the spectrum of "normal" aging.[1]

Discussion of age-related neuronal losses has been significantly improved with the advent of stereologic analysis. This involves a systematic random sampling of an anatomically-defined region of the brain using a counting scheme and mathematical rules to provide reliable and reproducible estimates of the total number of neurons in a given region, rather than relying on density-based measurements alone.[1] Computer-based programs are ideal for performing this kind of analysis. Stereologic studies have shown that there is relative preservation of cortical neurons throughout the age spectrum, in stark contrast to classical studies, with perhaps a loss of only ten percent of cortical neurons over the entire lifespan.[5] There may be subtle loss of neurons in specific regions of the hippocampus that are age-related. However, it is imperative to rule out an ischemic process, as the hippocampus is extremely vulnerable to ischemia, and animal models report no loss of hippocampal neurons with aging. Most subcortical structures also show neuronal preservation with age. The *substantia nigra pars compacta* is an exception; some degree of neuronal loss is seen with aging, approximately ten percent per decade.[1]

There are macroscopic changes in the aging brain that are almost universally seen.

The number of axonal spheroids increases with age, particularly within certain nuclei such as the globus pallidus, substantia nigra pars reticularis, dorsal column nuclei, and the anterior horns of the spinal cord. The significance is unclear. Dendritic growth may still be possible in aging brains. Dendritic structure remained stable with age in studies of the rat entorhinal cortex. A loss of dendritic complexity with age was seen in the subiculum of monkeys, however. Synaptic density may decrease slightly with age as well.[1]

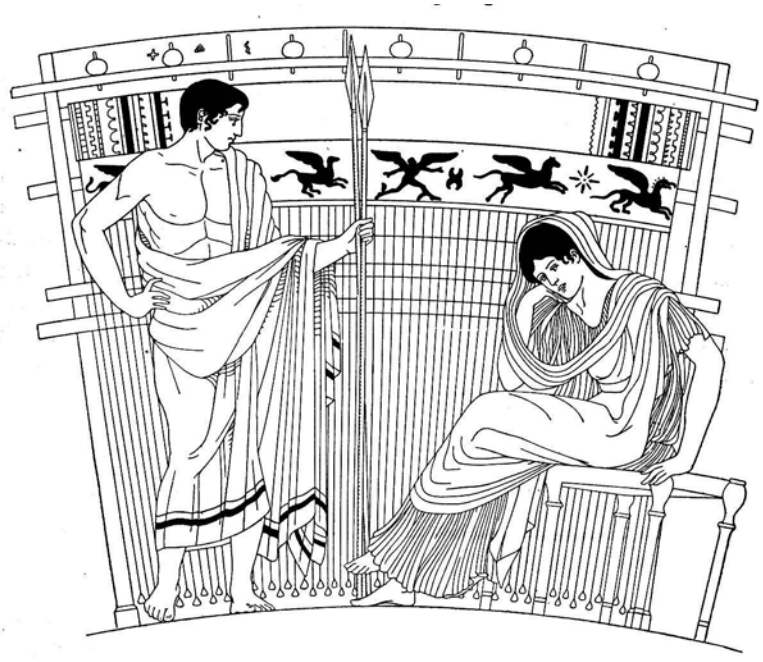
The amount of neuronal lipofuscin pigment in large pyramidal cells increases with age. Lipofuscin consists of undigested carbohydrates, proteins, and lipids that are present in residual bodies derived from the lysosomal system. Certain neurons are particularly prone to lipofuscin accumulation, such as the cranial and spinal motor nuclei, red nucleus, lateral geniculate nucleus, globus pallidus, inferior olivary nuclei in the medulla, and dentate nucleus in the cerebellum. The significance of this accumulation is unclear. Accumulation may contribute to abnormal intracellular protein elimination.[6] However, the nuclei most affected by lipofuscin accumulation are very little-affected by age-related neuronal losses.

Increased gliosis is present in aging brains. There is also a significant increase in the number of corpora amylacea (polyglucosan bodies) within astrocytic processes, particularly in the perivascular, subependymal, and subpial regions.[7] They are also abundant at the base of the brain, olfactory tract, and spinal cord white matter. "Thorn-shaped" astrocytes that are positive for tau protein are seen in about 50% of brains by the eighth decade in the same distributions as the corpora amylacea. There is also microglial activation and granular degeneration of myelin in the white matter. The biologic significance of the white matter pathology is unclear.[1]

Microscopic arterioles also develop changes with aging. Small venules in periventricular white matter show increased adventitial collagen deposition.[8] Arteriosclerotic hyalinosis is present in the white matter, basal ganglia, and thalamus, which may be exacerbated by hypertension. Mineralization or ferrugination of vessels is frequently seen incidentally, particularly in the arterioles of the basal ganglia and capillaries of the molecular layer of the dentate gyrus in the hippocampus. Mild dilation of perivascular spaces, also known as cribriform change, is present in the white matter and basal ganglia.

Given that AD pathologic changes are frequently seen in older brains, one might ask if AD is an inevitable con-

sequence of aging. The answer is most likely no. AD usually begins with a failure of short-term memory. Memories are created via a physiologic phenomenon known as **long-term potentiation (LTP)** between hippocampal neurons. In animal models, LTP is harder to induce in aged rats, but reduction in synaptic strength (long-term depression) is easier to induce in these rats. LTP also decayed about twice as fast in older rats compared to young. Thus, faulty LTP mechanisms may be responsible for hippocampal neuron and synapse instability in aging. However, older animals do continue to learn and make new memories via LTP and do not exhibit symptoms of "dementia." Moreover, reduced activity in the granule cells of the hippocampal dentate gyrus has been observed in old monkeys, but no abnormalities are appreciated in neurons in hippocampal areas CA1 and CA3. Area CA1 (Sommer's sector) is the most severely affected part of the hippocampus in AD, but the dentate gyrus granule cells are unchanged in AD until very late in the illness. Thus, aging changes likely have different mechanisms than AD changes and are not necessarily interrelated.[9] Aging is certainly a risk factor for developing neurodegenerative diseases such as AD, but AD is not necessarily an inevitable consequence of aging. In addition, pathologic criteria for diagnosing AD in the "oldest-old," brains older than 90 years of age, break down. Patients with dementia in this age group have fewer neuritic plaques and neurofibrillary tangles in their brains, given their degree of dementia. This suggests that there are molecular and physiologic substrates of dementia that are masked by plaques and tangles in younger brains that need further elucidation in older brains.[10]



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Disclosure of Financial Interests

The author and his spouse/significant other have no financial interests to disclose.

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An Evidence-based Approach to Stroke Prevention: Important Advances in the Last Decade

Brian Silver, MD

Significant advances in stroke have been made in the last decade including TIA management, treatment of atrial fibrillation, and identifying unhelpful stroke treatments. This brief review will focus on these particular advances.

Risk factors for stroke

Though there are some stroke risk factors which cannot be modified (e.g. age, family history, race, gender, and personal history of stroke or TIA), there are a number of modifiable risk factors. The INTERSTROKE study[1] found that 90% of all strokes were associated with ten causes including:

- hypertension
- current smoking
- elevated waist-to-hip ratio
- poor diet
- reduced physical activity
- diabetes
- increased alcohol intake or binge drinking
- psychosocial stress and depression
- cardiac causes, and
- ratio of apolipoproteins B to A1.

Modification of these risk factors could potentially lead to a dramatic reduction in incident stroke.

TIA and stroke

In a large population-based study, Hackam and colleagues found that one out of eight stroke patients had a prior TIA.[2] A prior TIA was associated with a reduction in hospital mortality, in-hospital cardiorespiratory arrest, seizure occurrence, and a favorable outcome supporting the hypothesis of ischemic preconditioning.

Johnston and colleagues found that 10.5% of patients who presented with TIA returned within 90 days because of stroke, half of which were in the first two days.[3] Five factors associated with stroke risk included age greater than 60, diabetes mellitus, symptom duration longer than ten minutes, weakness, and speech impairment.

From this study and another in the United Kingdom, the ABCD2 score was developed [Age greater than 60 (one point), Blood pressure 140/90 mmHg or greater (one point), clinical feature of unilateral weakness (two points) or speech impairment without weakness (one point), Duration greater than 60 minutes (two points) or ten to 59 minutes (one point), and Diabetes (one point)]. Scores greater than four are associated with the greatest risk of recurrence.

Both the SOS-TIA study[4] conducted in France and the EXPRESS study[5] conducted in the UK showed an 80% reduction in expected stroke risk with rapid evaluation (e.g. carotid imaging, telemetry within 24 hours) and treatment (carotid stenosis repair, warfarin for atrial fibrillation within a few days, statins for elevated LDL).

Anticoagulation is generally recommended for an ABCD2 score of greater than two and no anticoagulation is recommended for a score of zero.

Atrial fibrillation

CHADS2 is a six-point score (range zero to six) in patients with atrial fibrillation with points assigned as follows: Congestive heart failure (one point), Hypertension (one point), Age greater or equal to 75 years (one point), Diabetes mellitus (one point), previous Stroke/transient ischemic attack (two points). Higher scores are associated with greater risk for stroke. Anticoagulation is generally recommended for a score of greater than two and no anticoagulation is recommended for a score of zero. Uncertainty exists about anticoagulation of patients with a score of one.

The CHA2DS2VASc score was developed to help distinguish those with higher versus lower risk in the CHADS2 category of zero to one. The scores range from zero to nine with the following point assignment: [Congestive heart failure (one point), Hypertension (one point), Age greater or equal to 75 years (two points), Diabetes mellitus (one point), previous Stroke or transient ischemic attack (two points), Vascular disease i.e. CAD (one point), Age 65-74 years (one point), Sex category (one point for female gender). A CHA2DS2VASc score of zero to one predicts a lower risk of future stroke than dose a CHADS2 score of zero to one.

Based on randomized trials, the risk of stroke following atrial fibrillation can be reduced by treatment with all of the following medications (approximate relative risk reductions noted with the caveat that there have been no direct trial comparisons between dabigatran, apixaban, and rivaroxaban): dabigatran 75%, apixaban 70%, rivaroxaban 60%, warfarin 60%, aspirin and clopidogrel 30%, and aspirin 20%. The absolute differences in clinical trials are as follows: dabigatran versus warfarin 1.11% per year versus 1.69% per year (Re-LY trial), rivaroxaban versus warfarin 2.1% per year versus 2.4% per year (ROCKET-AF trial), apixaban versus warfarin 1.27% per year versus 1.60% per year (ARISTOTLE trial), apixaban versus aspirin 1.6% per year versus 3.7% per year (AVERROES trial), clopidogrel plus aspirin versus warfarin 5.60% per year versus 3.93% per year (ACTIVE-W trial), clopidogrel plus aspirin versus aspirin 6.8% per year versus 7.6% per year (ACTIVE trial).

The different absolute annual risks in each trial reflect the different patient populations included (i.e. mean CHADS2 scores were higher in some trials) and different outcome measures (i.e. stroke versus stroke, myocardial infarction, and death). Intracranial hemorrhage is less

with dabigatran, apixaban, and rivaroxaban as compared with warfarin. Caution should be used with dabigatran in patients age greater than 80 years because of the risk of life-threatening gastrointestinal hemorrhage.

Unhelpful stroke treatments

Long-term dual anti-platelet therapy

Not only does the combination of clopidogrel and aspirin for 18 months or more not reduce the risk of stroke, there is also an increased risk of major bleeding, as demonstrated in the MATCH and CHARISMA studies. At this time, the only solid evidence supporting combination treatment is for one year after cardiac stent and for at least six weeks after carotid stent placement.

Immediate anticoagulation with heparin or heparinoid products for most stroke patients

A meta-analysis of trials by the Cochrane collaboration found no evidence that immediate anticoagulation reduced the risk of death or dependency at the time of follow-up.[6] Though there were fewer ischemic strokes, this result was offset by an increase in intracranial hemorrhage. The HAEST trial showed no benefit of immediate anticoagulation with dalteparin (a low molecular weight heparinoid) in patients with acute stroke and atrial fibrillation. The RAPID trial[7] enrolled 67 patients within a mean of 6.9 hours of stroke and found a suggestion of benefit for very early anti-coagulation but no additional studies have been performed. Patients with cerebral venous thrombosis probably do benefit from immediate anticoagulation (even in the setting of hemorrhage) based on small randomized trials.

Intentional blood pressure lowering in the first week after stroke

The SCAST study compared candesartan with placebo in the first week after stroke.[8] After seven days, mean systolic blood pressure was 5 mmHg lower in the candesartan group (147 versus 152). At six months, there was no difference in the risk of stroke, myocardial infarction, or death but functional outcomes were about 17% worse in the candesartan group. Hypotension and renal failure were more common with candesartan. Unless another medication that lowers blood pressure can be shown to improve outcomes, intentionally lowering the blood pressure in the first week after stroke should be avoided unless it poses a potential risk to the patient (e.g. systolic blood pressure greater than 180 mmHg in tPA patients and 220 mmHg in non-tPA patients). For patients known to be compliant with anti-hypertensives prior to stroke, it is reasonable to resume medications to avoid rebound hypertension.

100% oxygen therapy in acute stroke

A systematic review and meta-analysis of oxygen therapy in myocardial infarction concluded there was insufficient evidence to recommend routine supplemental oxygenation. In fact, one study showed a significantly increased risk of death. A quasi-randomized Norwegian study of acute stroke patients found that 100% oxygen therapy was associated with reduced survival at one year, particularly in mildly or moderately affected patients.[9] The SOS pilot study suggested more improvement at the end of one week in patients receiving 2L of oxygen by nasal cannula but there were baseline imbalances in the groups.[10] The pivotal Stroke O2 Study is now ongoing (http://www.so2s.co.uk).

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Disclosure of Financial Interests

Brian Silver, MD, has served as a defense expert in medical malpractice cases of stroke and has received compensation for work done for Medscape, MedLink, and Oakstone Publishing.

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Epilepsy Concerns in Older Patients

Andrew S. Blum, MD, PhD

Epidemiology and Etiology

Among those with epilepsy, those over age 65 represent the fastest growing age-related subgroup. The incidence of epilepsy grows noticeably with advancing age, and reaches 85.9/100,000 for 65-69 year-olds and increases to greater than 150/100,000 in those greater than 80 years.[1] Nearly 10.5% of elderly nursing home residents receive anticonvulsants.[2]

In elderly patients with epilepsy, cerebrovascular etiologies account for up to one half of cases. Other etiologies for epilepsy in this age group include dementia (primarily Alzheimer's disease), brain tumors, and head trauma. Another large subgroup is cryptogenic, and vascular mechanisms are postulated to contribute significantly to this group as well.[3] Epilepsy risk is increased greater than 20 fold within one year after stroke. Cortical strokes, hemorrhagic strokes, and those with acute symptomatic seizures are more likely to lead to later epilepsy. Alzheimer's disease patients may have up to a ten-fold increased risk of epilepsy than those without this diagnosis.[4] A recent VA study found that stroke and dementia were the most common risk factors for the development of new-onset epilepsy—the combination of both was synergistic. Statin use carried a lower risk of epilepsy, as did hyperlipidemia, and obesity.[5] A case-control study in Quebec found a significantly reduced adjusted rate ratio of epilepsy among statin users than non-users[6] in those who underwent coronary revascularization, as well as a dose effect of statins on epilepsy expression. These statin study results are intriguing and await further biological explanation and replication.

Diagnostic Issues

The elderly do not always exhibit classical semiologies or auras as in the young. Semiologic analyses of seizures have revealed that subtle and brief periods of confusion are seen much more often in the elderly compared to younger adults. Almost 30% of older patients later diagnosed with epilepsy were first misdiagnosed with blackouts, syncope, altered mental status and confusion.[4] Postictal periods can be much more prolonged in this age group, lasting days.

The diagnosis of seizure in the elderly is made difficult by frequently limited or vague histories and by numerous competing diagnoses in this age group, including syncope and **transient ischemia attacks (TIA)**. Cognitive impairment in the patient may further confound the history. The events are often unwitnessed and confusional symptoms are common. Specialists may not be utilized as often to sift through these presentations. Falls may be ascribed to imbalance, particularly if a lapse in consciousness is underappreciated.

In elderly patients with epilepsy, cerebrovascular etiologies account for up to one half of cases.

Differential Diagnosis and Work-up

The differential diagnosis for spells in this group includes TIA, syncope (especially convulsive syncope), migraine with confusion, drug intoxication, infections, psychiatric disorders, transient global amnesia and dementia with superimposed delirium. Multiple metabolic etiologies should be sought. These include hypo- and hyperglycemia, thyroid dysfunction, hypercapnia, uremia and hyponatremia.

Electroencephalography (EEG) can be valuable, but beware potentially confounding false positive findings. A modest amount of temporal theta activity may be seen in drowsiness as a normal finding in this age group. Cerebrovascular disease may be associated with focal slowing. **Subclinical rhythmic electrographic discharges in adults (SREDA)** and wicket spikes represent two benign variant patterns that can mimic epileptiform phenomena. **Long-term video-EEG monitoring (LTM)** may be helpful in the work-up for those with recurrent spells that suggest seizure. Brain imaging (preferably MRI) is advised. As with EEG, numerous abnormalities may be found of uncertain significance in this age group and correlation with the clinical presentation and the EEG are needed. Other investigations to consider include electrocardiogram, holter monitoring, echocardiogram, tilt-table or sleep studies and/or vestibular testing, as appropriate, to explore other mimics.

Prolonged confusional states can be encountered, either as post-ictal phenomena, or as a manifestation of non-convulsive status epilepticus. This latter diagnosis requires a level of suspicion in elderly patients with unexplained stupor; EEG is necessary to make this diagnosis.

Management

In some older patients, especially those with cognitive impairment, help from caregivers with medications may be critical. A home safety evaluation may be helpful. Pro-convulsive medications in the patient's medication list should be re-evaluated and minimized, if possible.

Medical management of epilepsy in the elderly poses several distinct challenges. Aging leads to alterations in pharmacokinetic and pharmacodynamic parameters, increasing the risk for side effects of **anti-epileptic drugs (AEDs)** and decreasing the predictability of dose and blood level relationships. Protein binding may be occasionally lower in the aged, especially in those with poor nutritional status or other causes of hypoalbuminemia. Highly protein bound medications such as phenytoin and valproate may have higher free fractions in the elderly, which can promote clinical toxicity at lower total doses than in the young. Some elderly may have delayed absorption due to slower gastric emptying, or delayed intestinal transit time, as well as a lower overall volume of distribution. Decreased hepatic or particularly renal clearance in the older patient population can lead to unexpectedly higher serum AED levels.

The elderly tend to have more medical diagnoses and take more medications than a younger population, and thus, are at an intrinsically greater risk of drug-drug interactions.[2] A recent study found that 45.5% of VA patients had clinically meaningful potential drug-drug interactions with prescribed AEDs. Nearly half of these had multiple drug-drug interactions, and the most common related to cardiovascular medications.[7] Newer AEDs, as a group, exhibit fewer hepatic affects, are more often renally cleared, have lower protein binding, and thus have fewer drug interactions.

Numerous medications more common in the elderly pose significant reciprocal interactions with some AEDs. Highly protein bound AEDs (e.g. phenytoin and valproate) interact with other highly protein bound concomitant medications (e.g. warfarin), leading to complex untoward interactions affecting both the AED free levels and the degree of anticoagulation. Cytochrome P450-inducing AEDs (phenytoin, carbamazepine, phenobarbital) accelerate the clearance of many drugs that rely upon hepatic catabolism, including some antiarhythmics and antihypertensives, many cholesterol-lowering statins, and some psychotropics. Valproate is an example of an enzyme inhibitor, as are cimetidine, erythromycin, verapamil, among others. These enzyme inhibitors may increase circulating levels of some AEDs, potentially leading to AED toxicity.

Other co-morbidities are particularly germane to the older population with epilepsy. The older generation of AEDs particularly hasten bone demineralization. The elderly are at a higher risk of osteoporosis and balance issues, leading to falls and potentially to fractures. Cognitive concerns are enriched in the elderly as well. Some AEDs pose particular concerns to cognition (e.g. phenobarbital, topiramate) and may be less well tolerated in this population as a result. Hyponatremia, occasionally provoked by carbamazepine and more often with oxcarbazepine use, is more frequently encountered in the aged, particularly with concomitant diuretic use.

Treatment Choice

There have been three randomized, double-blind clinical trials for older patients with epilepsy. Most trials of AEDs have been conducted in younger adults. One UK study compared lamotrigine vs. immediate release carbamazepine in elderly with new-onset epilepsy. They found similar efficacy in both, but better tolerability in the lamotrigine arm.[3] A later international study compared lamotrigine with slow release carbamazepine and did not observe as marked a tolerability difference.[8] A VA study compared gabapentin vs. lamotrigine vs. immediate release carbamazepine in the elderly and found better tolerability in the gabapentin and lamotrigine arms vs. carbamazepine without efficacy advantages.[9] Open label studies with a variety of newer AEDs (e.g. oxcarbazepine, levetiracetam, and topiramate) in the elderly have demonstrated their potential value in this age group.[4] A VA study observed that patients taking phenobarbital, valproate, and gabapentin were less adherent to their AED regimen whereas those taking lamotrigine and levetiracetam were significantly more adherent.[10]

In treating the elderly, it is advised to keep the regimen as simple as possible. Seizure type may influence AED selection, but most elderly patients (particularly new-onset patients) will have partial onset seizures. Tolerability concerns should impact AED selection and choices individualized. Doses should begin quite low and titration should be slow, where possible. Cost concerns may be influential. The majority of elderly do respond to AED treatment. But, refractory epilepsy may occur in this group as in younger cohorts. Surgical resection is not as commonly used in this age group, though may be an option for a subset. Vagal nerve stimulation is another option for some when AEDs prove inadequate and surgery is not a viable option.

Summary

Epilepsy incidence is higher in the elderly than in younger adults. Diagnosis and management of the elderly with epilepsy presents several specific demands. A variety of other mimics can confound the diagnosis in this age group. Treatment choices should consider issues of metabolism, co-morbidities, and side effect profiles. Drug-drug interactions are prevalent and need to be minimized and/or anticipated.

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Disclosure of Financial Interest

The author discloses financial interests in Digitrace-Sleepmed and Springer Publishing.

Discussion of off-label usage: gabapentin, levetiracetam, and topiramate.

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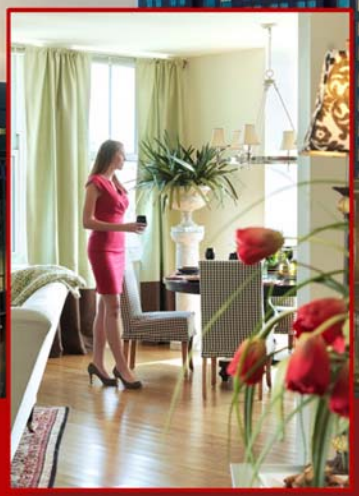

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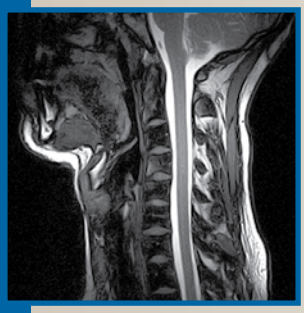

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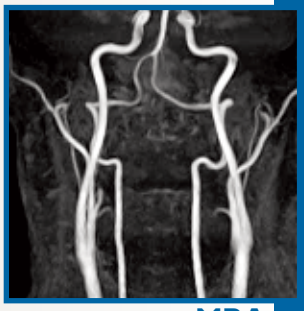

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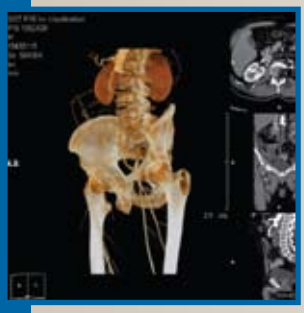

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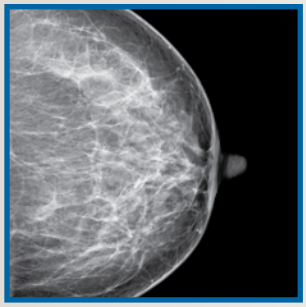

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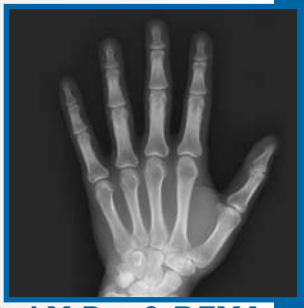

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Gait Disorders in the Elderly

Joseph H. Friedman, MD

Gait and balance both decline with normal, or non-pathological aging. Gait and posture tend to become parkinsonian, meaning "looks like Parkinson's disease."[1,2] This connotes a stooped posture, reduced armswing, reduced stride length and a tendency towards a flat foot strike

However, a large number of pathological changes may develop contributing to this normal decline. Some of these involve the nervous systems, central or peripheral, and some involve non-neurological systems which not neurologically controlled.

It is obvious that gait difficulties and imbalance contribute to reduced quality of life. It is uncommon to meet a patient in a nursing home who walks normally. Gait impairment and the risk of falls is one major contributing factor to nursing home placement.

Falls are common in the elderly.[3] There are different definition for "fall," but the World Health Organization definition of a fall (E880-E888 in ICD 9 and W00-W19 in ICD 10) requires the person to come to rest "inadvertently" at a lower level than intended. I consider trips and slips as different although possible indicators of a falling tendency. We all may slip on ice, or trip over a plug, but it is an indicator of a problem if it is recurrent, suggesting a problem correcting the loss of balance.

Over 30% of community dwelling people over 65 fall at least once each year[4] and falls were the leading cause of traumatic death and morbidity in the elderly.[4] The death rate from falls skyrockets with age, increasing from ten per 100,000 per year for ages 65-74, to 147 per 100,000 per year for those over age 85.[5] The financial costs alone are astronomical and increasing.[3]

The claim that "falls among older adults are preventable," is akin to stating that cigarette smoking or drug addiction or obesity is preventable. The correct statement is, and should be, "falls in the elder can be reduced." They cannot be prevented, partly due to impaired cognitive function that often accompanies gait disorders in the elderly.[6]

My own experience, from talking to patients and from reviewing doctor notes is that many patients do not have their walking evaluated during their routine **primary care physician (PCP)** appointments. In a study of hospitalized patients, often admitted *after* a fall, gait was not documented on the chart.[7] The reasons for this are manifold, but I believe that two, which are virtually never discussed, are: doctors have not been taught how to evaluate gait and that most doctors lack a vocabulary for gait, and therefore have difficulty describing what they see.

Walking requires the ability to stand, maintain position (keeping center of gravity over the feet) and advance. The overall controlling mechanism is the brain, but, obviously, the feet, ankles, knees and hips must be able to bear the weight; the muscles must be sufficiently strong. The inner ear must be able to determine the direction of gravity's pull. Binocular vision is important for judging distance and compensating for other impaired sensory systems. The peripheral nerves must convey information from the environment in to the spinal cord, and then out to the appropriate muscles at the appropriate time ("garbage in, garbage out"). And aging affects each of these systems, often in very unequal ways. Determining an exact cause of a gait abnormality is sometimes impossible, although identifying which systems contribute to the process is usually not that difficult to determine.

Vocabulary

Stand: ability of patient to stand up from a chair and remain upright.

Posture: assess kyphosis, scoliosis, lordosis, or other deviations from normal

Stride length: distance between steps, which should be equal on the two sides, and appropriate for the distance and speed

Arm swing and arm posture: as one foot advances the contralateral arm swings. This should be symmetric and appropriate for speed.

Base: the distance between the feet during walking. This should be shoulder length or a little less and should remain relatively stable from step to step.

Speed: normal, slow or increased

Turning: people normally pivot when they turn. In Parkinson's disease and other gait disorders they may take several steps. In addition, some patients lose their balance on turning or their feet freeze.

Balance-assessed: with a pull from behind (after warning the patient) but also assessed by observing the walking. Patients should walk in a straight line, and not veer.

Romberg test: originally developed as a test for tabes dorsalis (tertiary syphilis of the spinal cord), this is a general test of position sense, with the eyes closed. Cerebellar, mild vestibular and sensory disorders all may become evident. Its importance is less in the amount of sway than it is of the ability to compensate for the sway, without falling.

Gait should be assessed initially by observing the patient standing up from a chair. In my office I use the same chair each time, a firm bottom chair with armrests. The patient is asked to attempt to stand without using the arms, but if unsuccessful, with using the arms. It requires great strength to stand without using the arms, yet it requires very little leg strength to stand or to walk if the patient can keep the knees locked.

What is a "normal" gait? My own interpretation of normal is that it would not stand out as different if I saw the person walking on the street, or in a crowd.

If possible, observe the patient walk into the examining room. If that appears normal and the history doesn't suggest a gait or balance problem, then record the gait exam as normal. If the gait is not clearly normal then it should be more formally evaluated. Ask the patient to walk ten to 15 feet.

Common neurological gait disorders in the elderly

Parkinsonism: the most common, and is characterized by a small stride, stooped posture, slowness, normal base, reduced or absent armswing, absence of pivot during turning, poor balance.

cervical myelopathy: reduced stride, slow, excessively narrow base, tendency to walk on the balls of the feet with a circumducting stride, knees extended; armswing may be reduced or normal

ataxic: there are a variety of ataxic gaits. The gait of alcohol intoxication is due to midline cerebellar degeneration, and looks like a "drunken" gait, with a variable base and variable stride length, producing a lurching quality, with a loss of balance to either side. "Sensory ataxic gait" is due to reduced proprioception, often combined with other sensory reductions, to produce a wide based gait while the feet "slap" the ground, as if to increase the stimulation. Bilateral vestibular dysfunction does not cause vertigo but does cause an ataxic gait, with a wide or variable base and a tendency to lose balance to either side. In ataxic gaits, the arms are often abducted, to reduce the movement of the center of gravity. Stride length is usually somewhat reduced but often variable. Speed and turning are reduced. Unilateral cerebellar lesions cause a tendency to veer or lose balance on the ipsilateral side.

hemi and bilat paretic: the typical gait of a person who suffered a hemiparetic stroke involves reduced armswing on the affected wide, with the elbow and hand contracted, reduced stride on the affected side, with a circumducted stride and a tendency to keep the affected knee in extension. With strokes on both sides, the gait disorder become symmetric.

fear of falling: this is a gait disorder seen in elderly patients with a history of falls or near falls. They take small, cautious steps, as if walking on ice.

Rule # 1: if a patient requires an assistive device, the reason should be recorded.

Therapy comes after the diagnosis. The importance of physical therapy and daily exercise cannot be overstated. The risk of falls must be reduced as far as possible, but consonant with the recommendation for walking as much daily as possible. Home safety assessments by a visiting nurse service are paid for by Medicare and may recommend banisters, ramps, extra lighting, etc. Walking devices should be forcefully encouraged, especially to patients reluctant to use them either for vanity's sake, or because of fear of becoming "dependent" on them.

When elderly patients with gait problems are hospitalized for medical problems they are often put at bedrest and rapidly decondition, sometime forever losing their ability to walk.

Concluding suggestions

Rule # 1: if a patient requires an assistive device, the reason should be recorded.

Rule # 2: falls should be charted and the evaluation must include an assessment of gait and balance.

Rule #3: gait should be assessed, even if briefly, in the elderly. If the gait is abnormal, the cause must be determined, and if not adequately explained, the patient should be referred to a gait specialist, usually a neurologist.

Rule #4: confirm the patient's explanation for the gait disorder. Many older patients incorrectly blame arthritis or back pain for their problems.

Rule #5: mobilize hospitalized elderly patients when possible and encourage exercise.

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Disclosure of Financial Interests

Lectures: Teva, Ingelheim Boehringer; General Electric

Consulting: United Biosource; Bubaloo, Halsted, Reitman LLC; EMD Serono; Genzyme; Teva; Acadia; Addex Pharm; Schwarz Pharma; Roche

Research: MJFox; NIH: Cephalon; EMD Serono; Teva; Acadia

Royalties: Demos Press

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Idiopathic Normal Pressure Hydrocephalus – Neurosurgical Management of Dementia!

Petra M. Klinge, MD, PhD

Idiopathic normal pressure hydrocephalus (**iNPH**) is a condition of disturbed **cerebrospinal fluid** (**CSF**) dynamics, of unknown cause, giving rise to ventricular enlargement with a normal intracranial pressure.[1] The phenomenology of iNPH is characterised by a slowly progressive impairment of gait and balance, cognitive deterioration, and urinary incontinence.[2] Treatment of iNPH is surgical, most often ventriculo-peritoneal shunts.[3] Selection of patients for surgery is generally based on symptoms and signs, CT or MRI verified ventriculomegaly and most often the results of different CSF dynamic supplementary tests.

Patients at risk for developing iNPH is the aging population.[4] As the population is aging due to a higher longevity in most of the developed but also developing countries, the prevalence of iNPH is very likely to increase. Also, elderly patients are looking for an improved quality of life, and are no longer willing to accept disabilities of ageing. INPH is associated with many co-morbidities as a result of age-related conditions and other at-risk diseases, such as cerebrovascular disease and Alzheimer´s disease.

A high rate of Alzheimer's disease (**AD**) pathology on cortical biopsy[5] as well as **subcortical white matter disease** (**SAE**) on magnetic resonance imaging[6] in patients with shunt-responsive iNPH suggests that iNPH, AD and SAE are interrelated and may share common pathophysiologcial mechanisms, e.g. an age-related stagnation of cerebrospinal fluid circulation.[7]

This was the background for a prospective clinical study carried out in Europe from 2004 to 2009, involving 12 study centers. In the European idiopathic NPH trial both "typical" and "questionable" NPH (the latter presenting with co-morbidity) candidates were included and shunted solely based on clinical and radiological grounds. CSF dynamics (TAP-TEST, Rout and compliance measurements) were performed in every patient, however, patients were shunted irrespective of the CSF dynamic test results, and three and 12 months outcome of shunting was measured using pre- and postoperative measurement of motor and cognitive test batteries.

Among the study aims, one important question was whether the outcome of shunted patients with NPH is affected by the presence of dementia. The important cut-off separating "typical" from "questionable" iNPH patients was the MMSE score. Patients classified as "typical" had to show a mild to moderate cognitive impairment (MMSE scores greater than or equal to 21) with onset together with or after the gait disturbance, and including impaired wakefulness, slowness, and memory deficits, whereas patients presenting other (aphasia, apraxia or agnosia) or more severe cognitive deficits (MMSE scores less than 21) including an onset prior to the gait disturbance were classified as "questionable". Single cortical infarcts, moderate cortical atrophy and moderate to severe subcortical white matter disease were the radiological (MRI) criteria for "questionable" iNPH.

Among the study aims, one important question was whether the outcome of shunted patients with NPH is affected by the presence of dementia.

142 patients were included in the final analysis, and one year outcome post shunting was assessed with the **modified Rankin Scale** (**mRs**) and a comprehensive iNPH scale based on motor and cognitive test batteries. Fifty-five patients were classified as Questionable; 28 had MMSE scores below 21 and 27 patients had either a non-typical gait or MR changes with atrophy, cortical infarcts or moderate to severe white matter changes.

84% of iNPH patients diagnosed and referred for shunt surgery, based on clinical and MRI findings, were improved 12 months after surgery; measured by the iNPH scale. Of note is that, at one year, there was a two-fold increase of patients performing normally in the various cognitive domains tested, e.g., Stroop Test and **Rey Auditory Verbal Learning Test** (**RAVLT**). The corresponding improvement rate measured by the mRs was 69%. 37% were improved by one step, 25% by two steps and 7% by three steps. The proportion of patients able to live independently (scores zero to two on the mRs) increased from 53% before surgery to 82% 12 months after shunt treatment.

The most important finding was that patients with "questionable" iNPH did not differ from patients with "typical" iNPH in regard to improvement in iNPH scale total score or the one year outcome in the modified Rankin Scale.

The European iNPH study results indicate that co-morbidity of dementia is not a factor influencing the outcome of shunting. Shunt operation should be recommended to patients presenting with iNPH symptoms and signs and compatible MRI/CT changes, and evidence of co-morbidity of dementia should not be an exclusion criterion for shunt treatment.

Whether shunt treatment is beneficial in iNPH patients presenting with co-existing AD or cerebrovascular disease, as suggested by the results of the European trial, needs to be further confirmed in the framework of a controlled prospective trial randomising possible iNPH with co-morbidity to shunt vs. no shunt treatment, and comparison of functional outcomes within a one year period.

This requires both infra-structure provided by focussed centres allowing an inter- and cross-disciplinary disease approaches and management. In the multi-

disciplinary NPH Center associated with the Memory Disorder Program at Butler Hospital, Providence, RI (Stephen Salloway, MD and Paul Malloy, PhD) iNPH patients with and without co-morbidity of dementia are currently included in a research protocol. The aim is to identify markers and clinical diagnostic criteria relevant and important to the co-morbidity in iNPH. This should allow better characterization of iNPH with co-morbidites, to establish and provide standardized criteria for the identification of this vulnerable patient population to prepare for a randomised controlled trial.

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Disclosure of Financial Interests

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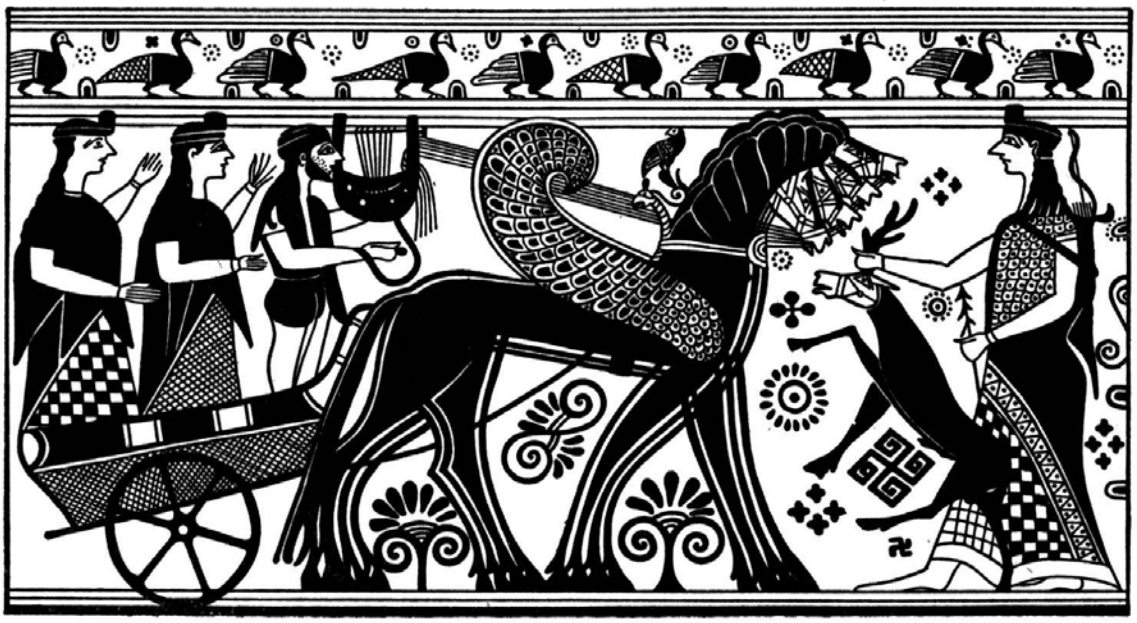

Sleep and Aging

Richard P. Millman, MD

As one ages, one frequently complains of sleep not being restorative. It is a total myth that one needs less sleep after age 65 and in fact, there is really minimal change in sleep period time, the amount of time one stays in bed, with aging. There is a gradual decrease in total sleep time of approximately 27 minutes per decade from mid-life until the eighth decade. What does happen with aging is that sleep becomes much more fragmented. There is also a decrease in stage N-3 or slow wave sleep from young adulthood to middle age without a significant change after age 50. This stage of sleep is a stage where growth hormone is produced and the relative drop in slow wave sleep with increasing age may account for some of the shrinkage we see in the elderly. There are multiple problems that occur at any age range. Some of them are enhanced with aging and these sleep problems will be discussed in further detail.

Circadian Rhythm Issues

Studies have shown that external cues and activity are most important in keeping elderly patients awake during the daytime and asleep at night. In demented nursing home patients, sleep monitoring has demonstrated that these patients may totally lose the normal bedtime and wakeup times seen in healthy elderly individuals. In fact, demented individuals who are not stimulated may sleep part of every hour of a 24 hour day.

In regards to circadian rhythm, many older individuals maintain a regular bedtime and wakeup time. Sometimes lonely or depressed individuals will tend to go to bed earlier and then wake up in the middle of the night with the chief complaint of insomnia. This behavior is consistent with an advanced sleep phase syndrome and is relatively easy to treat. It is important to have the patient increase their activities in the late afternoon and early evening and slowly push their bedtime later at 15 minute intervals.

Other individuals do not fall asleep until 2 or 3 am and then get up at 11 am. Although this picture of delayed phase syndrome has been classically described in adolescent and young adults, it also can be seen in older populations. The key feature is that once the patient falls asleep, they stay asleep until the morning. Patients may complain of initiation insomnia or excessive daytime sleepiness, especially if they force themselves to get up at 7 – 8 am. With the delayed phase syndrome, having a patient try to go to bed earlier absolutely does not work and, in fact, may increase complaints of initiation insomnia. Sedative hypnotics are not effective though perhaps evening melatonin may help reset the circadian clock in select individuals. Another option is to have the patient undergo therapy with bright light exposure in the morning.

Studies have shown that external cues and activity are most important in keeping elderly patients awake during the daytime and asleep at night.

Insomnia

The definition of insomnia is difficulty falling asleep, difficulty maintaining sleep or perception of poor quality sleep. This has to result in problems with daytime functioning including mood changes and fatigue. Chronic insomnia has been shown in multiple studies to occur in approximately 10 – 15% of the population. Chronic insomnia is associated with poor physical and emotional health. It has also been shown to precede the onset of depression in multiple studies. The earliest of this was a study done by Ford and Kamerow.[1] They demonstrated that the odds ratio of developing depression in the year after a bout of insomnia was markedly elevated at 39.8. If the insomnia resolved, the odds ratio was 1.6. This implies that there should be aggressive treatment of insomnia when it first occurs. In fact, patients become chronic insomniacs after as little as three to four weeks of not being able to sleep.

Clearly, any medications may not only cause insomnia but cause daytime sleepiness. In fact, withdrawal of certain medications may lead to insomnia or daytime sleepiness. It is therefore very important that the clinician look at all medication changes when assessing sleep problems. In addition, certain medications (such as fluoxetine) can be stimulating. If a patient takes that specific medication in the evening it may keep cause insomnia; this medication should clearly be given in the morning.

In regards to medical causes, heart failure, asthma exacerbations, COPD, sleep apnea and nasal congestion can all cause the patient to have insomnia and it is important to treat the underlying conditions. Pain certainly can cause insomnia and insomnia can increase chronic pain and headaches. Frequently in these patients it is important not only to treat the insomnia but also treat the underlying condition. Insomnia is clearly associated with psychiatric disorders and most psychiatric disorders including mood issues, anxiety and substance abuse all have either daytime sleepiness or insomnia associated with them. Since insomnia can make depression worse and depression can make insomnia worse, it is not unreasonable to treat both conditions when a patient presents. As noted above, circadian rhythm disorders can present as insomnia. Patients can also have primary or psycho-physiological insomnia. This is basically a learned condition in which patients really have lost the capabilities of sleeping.

Patients can be treated behaviorally. As shown in table there are very simple sleep hygiene education rules that all patients should use. More aggressive behavioral therapy can also be performed using cognitive behavioral therapy.[2] Cognitive behavioral therapy may include a combination of sleep restriction, stimulus control and relaxation therapy. It does require the patient to follow instructions very carefully if they want to have a successful result.

In regards to medications, frequently sedative hypnotic agents can have side effects, especially in the elderly. Long acting benzodiazepine agents such as diazepam,

Table 1. Sleep Hygiene Education

- Maintain a regular schedule for going to bed and arising
- Avoid excessive time in bed
- Avoid taking naps during the day and early evening
- Use the bed only for sleeping and sexual relations
- Do not watch the clock while in bed
- Do something relaxing before bedtime
- Avoid light exposure from computers and phones prior to bedtime
- Make the bedroom as quiet and comfortable as possible
- Avoid taking the troubles of the day to bed
- Avoid consumption of alcohol or caffeinated beverages, especially within 6 hours of bedtime
- Get exercise, but early in the day (not within two hours of bedtime)
- Avoid going to bed hungry - eat a light snack in the evening if necessary
- Avoid bright light exposure in the hour before bedtime

flurazepam, and chloradiazepoxide have been associated with an increased risk of hip fractures.[3] Long-acting antihistamines, such as diphenhydramine, have also been demonstrated to cause cognitive function abnormalities and should also not be used in the elderly.[4] On the other hand untreated insomnia has in itself been associated with an increase in injuries due to falls.

Medications are clearly indicated in patients who fail behavioral therapies. Medications are also indicated when there are coexistent co-morbidities such as chronic headaches, chronic pain or psychiatric disorders. In the later situation the co-morbid condition makes the insomnia worse and vice versa. The question then arises about what agent to use. The basic concept in using sedatives is to have the patient take the drug in the evening and make sure that the effects are gone in the morning. One runs into potential problems with any of the shorter acting benzodiazepines since they are potentially addictive. The non-benzodiazepine agents working at the GABA receptor, such as zaleplon, zolpidem and eszoplicone, may be more appropriate. The only agent that has been to be safe if somebody cannot fall asleep for several hours or wakes up in the middle of the night and cannot fall back asleep is zaleplon.[5] Sedating anti-depressive agents such as trazodone and mirtazepine might be very helpful in this age range as well. The latter drug also increases appetite and may be beneficial in elderly patients who have trouble keeping weight on.

Restless Legs Syndrome

Restless legs syndrome (RLS) is a syndrome in which there is an incredible desire to move one's limbs; usually associated with pain or paresthesias. This is basically a sensation of restlessness which occurs when the patient is awake. The symptoms are worse at rest and resolve once the afflicted individual starts walking around. RLS seems to have a circadian rhythm and symptoms are worse in the evening or at night. RLS can be associated with **periodic limb movements during sleep (PLMS)**. RLS increases in frequency with aging and does need to be treated if there is significant discomfort or insomnia. PLMS should be treated if there is associated sleep fragmentation and complaints of insomnia or excessive daytime sleepiness.[6]

The basic mechanism behind the development of RLS as well as PLMS is a relative decrease in dopamine. One of the first things that a clinician should do is to check a serum ferritin level. It turns out that iron is associated with dopamine production. If the ferritin level is under 50mg/ml then it is worthwhile to give the patient supplemental iron even if the patient is not grossly anemic. Frequently iron therapy alleviates RLS symptoms. Dopaminergic agents such as pramipexole and ropinirole have been approved by the FDA as treatments for restless legs. Other agents that have been used include opioids, gabapentin and carbamazepine. There is really no role for benzodiazepines in treatment of either restless legs or periodic limb movement even though these agents historically were the first drugs used for this condition.

REM Sleep Behavior Disorder

Generally in REM sleep, the brain is incredibly active and this activity causes vivid dreaming. As opposed to cats and dogs that demonstrate twitching of the extremities in REM sleep, humans have no muscle tone which basically prevents them from acting out a dream. The only muscles that are effectively working are the eye muscles and the diaphragm. In patients with REM sleep behavior disorder, the switch that turns off muscle activity during REM sleep is dysfunctional and patients actually have at times muscle activity allowing them to act out their dreams. One can make the diagnosis of REM sleep behavioral disorder if REM sleep with increased muscle tone is observed on polysomnography. This observation has to be associated with at least one of the following: 1) a history of sleep related injuries or disruptive behavior associated with dream enactment. 2) Abnormal REM sleep behavior documented during the actual sleep study.[7]

REM sleep disorder can be idiopathic. It typically will occur with increased age and in men more than women. Unfortunately, some patients with idiopathic REM sleep behavior disorder may develop neurodegenerative disorders such as Parkinson's disease or Lewi body dementia.[8] REM sleep behavior disorder may occur in association with various neurological conditions including brain stem vascular lesions, brain stem neoplasms, demyelinating disease, auto-immune inflammatory disorders and neurodegenerative disorders. It may be triggered by medications as well.

The basic tenant of treating REM sleep behavior disorders is to protect the patient from injury. Benzodiazepines, such as clonazepam, have been shown to be effective in treating the disorder. In some patients this drug may last too long in the patient's system and those patients with daytime impairment from the medication might do better with a shorter acting agent such as lorazapam. Patents who have co-existing snoring or sleep apnea could potentially develop worse sleep apnea when given a benzodiazepine, so it is always important to do a sleep study on patients with suspected REM sleep behavior disorder not only to make the diagnosis of the disorder, but also to make sure the patient does not have sleep apnea. There are recent data suggesting

that melatonin at the beginning of the night may improve some patients.[9]

Obstructive Sleep Apnea

Obstructive sleep apnea (OSA) is a syndrome where the throat relaxes and closes off at night. When a patient goes to sleep, the majority of the pharyngeal muscles relax and the normal vacuum that one creates during inspiration pulls the throat closed. An obstructive apnea is an event lasting ten seconds or longer where the pharynx is totally closed off. A hypopnea is an episode where the throat is nearly closed off but there is still some minimal airflow. There is significant impedance to airflow such that the oxygen saturation falls at least 4% or more. More recently, **respiratory effort related arousals (RERAs)** have been described. These are events where the throat is narrowed, there is increased inspiratory effort and snoring typically persists until there is an arousal from sleep and the throat is able to open again. In those patients, there is not significant O2 desaturation. The pharynx may collapse at the region of the uvula and soft palate or in the hypopharynx or at both locations.

OSA is associated with not only sleep fragmentation, but also hypoxemia and hypercapnia. As a result, there can be excessive daytime sleepiness as well as sleep disruption. Nocturia can be a frequent symptom in patients with sleep apnea. The increase in negative suction that develops in the thorax as a patient tries to inhale against a closed glottis increases the return of fluids into the heart. Dilatation of the right atrium leads to an increase in atrial natriuretic peptide production. This leads to increased stimulus for the patient to urinate and nocturia. Often patients think that they will not be able to use positive pressure therapy during the night because they go to the bathroom frequently. Typically this symptom disappears when a patient is put on positive pressure therapy.

Obstructive events at night lead to falls in oxygen level and increase in carbon dioxide levels. When the patient wakes up there is catecholamine release and a surge in blood pressure. Catecholamine levels have been noted to elevated during the daytime and there is increasing evidence that obstructive sleep apnea can be a cause of daytime hypertension. Sleep apnea, however, may not be a contributing factor to daytime hypertension in patients over 60 because they have already developed fixed changes in their vasculature.[10]

OSA has been associated with an increase in cerebral vascular accidents while sleeping as well as myocardial infarctions. There is also increasing data showing that OSA is a contributing factor to atrial fibrillation. In fact, patients with untreated OSA and atrial fibrillation, have a higher chance of cardioversion failure than those patients where the sleep apnea is treated.[11]

Patients with OSA can have mood issues and more easily fall asleep during the daytime. The real fear in the elderly is that they could potentially fall asleep while driving a motor vehicle. Sleep apnea can also cause micro-sleeps, leading to inattentiveness while driving.

Risk factors for sleep apnea include upper body obesity, a family history of sleep apnea, nasal obstruction, retrognathia or pharyngeal narrowing. The latter can be caused by a deep set palate, an elongated uvula or enlarged tonsils. Age appears to be an independent factor for developing sleep apnea and there has been some discussion whether one should use a cutoff of five episodes of apnea/hypopnea per hour as the true level of significant level of sleep apnea in the elderly.

The treatment of sleep apnea in the elderly has some of the same premises as in younger populations. Clearly, in overweight individuals, weight loss is important. Alcohol and benzodiazepines in the evening can also cause the pharynx to collapse more readily and should be avoided. If the nose is congested, medications can be used to open up the nose. In the dry wintertime, saline nasal spray would be helpful as well. Some patient may do well using nasal strips to keep the nose open at night. The mainstay of treatment is positive airway pressure. If an elderly patient has mild to moderate sleep apnea and cannot tolerate positive pressure therapy, than one can consider an adjustable oral appliance.

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Disclosure of Financial Interests

The author and his spouse/significant other have no financial interests to disclose.

Discussion of off-label usage: Trazodone and mirtazepine. Clonazepam, lorazapam and melatonin for REM sleep behavior disorder.

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Less Than Optimal Dental Care Among Rhode Island Adults with Diabetes: The Need to Assure Oral Health Care for All Adults with Diabetes

Junhie Oh, BDS, MPH, Annie Gjelsvik, PhD, Deborah Fuller, DMD, MS, Erin Walsh, Virginia Paine, RN, MPH and Laurie Leonard, MS

Recent decades have seen an increase in the prevalence of diabetes in both Rhode Island and the United States. In 2010, it was estimated that approximately 8% of Rhode Island adults age 18 years and older were living with a diagnosis of diabetes, a percentage amounting to more than 64,000 individuals.[1] This trend of increasing diabetes prevalence is projected to continue in coming years due to the increasing rate of obesity, decreased physical activity, and growing elderly and minority populations.[2]

Periodontal disease is a major complication of diabetes. The association between periodontal disease and diabetes, particularly type II, is bi-directional.[3,4,5] Chronic hyperglycemic conditions increase the risk of oral health complications such as periodontal disease via altered immune responses and compromised wound healing. In addition, periodontal disease provides a chronic bacterial inflammation and infection source that may adversely affect insulin sensitivity, which in turn deteriorates glycemic control. The oral health status of patients with diabetes should be closely monitored to reduce and eliminate periodontal infection and avoid further worsening diabetic condition.

Given the current evidence, treating periodontal infection is considered an important component of overall diabetes management and care. The Centers for Disease Control and Prevention (CDC) and the American Diabetes Association (ADA) recommend that people with diabetes have a dental exam at least once every six months.[6,7] Patients who have advanced periodontal disease or whose diabetic condition is not well controlled, should be seen by a dentist more frequently.

The objectives of this report are to document the recent estimates of Rhode Island diabetic adults who received preventive dental care in the past year, and to assess determinants of disparity that may exist in the receipt of dental care among adults with diabetes.

Methods

Data used for this analysis were obtained from the 2006, 2008 and 2010 Rhode Island Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an ongoing telephone health interview survey of non-institutionalized U.S. adults age 18 years or older. Details of the BRFSS are described in the CDC website.[8] In even-numbered years, since 2000, oral health questions were included that asked adults if they received preventive dental care in the past 12 months (having visited a dentist or dental hygienist for a checkup or cleaning). For the three years, a total of 15,900 adults participated in the survey.

Table 1. Rhode Island Adults Age 45 Years and Older Who Reportedly Received Preventive Dental Care (Dental Checkup or Cleaning) in the Past 12 Months by Diabetes Status, 2006, 2008 and 2010 BRFSS

Variable	Adults diagnosed with diabetes		Adult with no diabetes		P-value
Category	Sample size*	Weighted % (95% CI)	Sample size*	Weighted % (95% CI)	
All	1,209	72.7(69.7–75.8)	9,140	83.5 (82.6–84.4)	<.0001
Gender					
Male	524	72.6 (68.2–77.0)	3,229	82.7 (81.2–84.2)	<.0001
Female	685	72.9 (68.8–77.0)	5,911	84.1 (83.0–85.2)	<.0001
Age (Years)					
45–64	586	72.8 (68.3–77.3)	5,741	84.2 (83.1–85.3)	<.0001
≥65	623	72.7 (68.6–76.7)	3,399	81.8 (80.3–83.3)	<.0001
Race/Ethnicity					
Non-Hispanic White	1,008	75.2 (72.0–78.4)	8,266	84.6 (83.7–85.6)	<.0001
Other	180	59.5 (50.0–69.0)	747	72.0 (68.1–75.8)	<.05
Education					
≤ High School	566	67.7 (63.1–72.3)	3,289	74.8 (73.0–76.6)	<.01
> High School	638	76.6 (72.5–80.7)	5,829	88.0 (87.0–89.0)	<.0001
Dental care coverage					
Yes	480	74.9 (70.2–79.6)	4,071	90.4 (89.3–91.5)	<.0001
No	373	66.5 (60.5–72.5)	2,381	69.6 (67.3–71.8)	0.3565

* Unweighted sample sizes for each category may not add up to total sample size because of missing and excluded data (responses of "don't know," "not sure," or refused). CI = confidence interval

Table 2. Receipt of Diabetes Management and Care in the Past 12 Months among Rhode Island Adults Age 45 Years and Older with Diabetes, 2006, 2008 and 2010 BRFSS

Variable	Preventive dental care		Foot check		Eye exam	
Category	Weighted %	AOR (95% CI)	Weighted %	AOR (95% CI)	Weighted %	AOR (95% CI)
All	72.7	–	79.2	–	82.4	–
Gender						
Male	72.6	0.94 (0.68–1.29)	79.2	0.97 (0.69–1.37)	82.7	1.09 (0.74–1.60)
Female (reference)	72.9	–	79.2	–	81.9	–
Age (Years)						
45–64 (reference)	72.8	–	79.6	–	78.7	–
≥65	72.7	0.99 (0.72–1.35)	78.8	0.94 (0.65–1.34)	86.6	1.86 (1.25–2.78)*
Race/Ethnicity						
NHW (reference)	75.2	–	78.8	–	83.6	–
Other	59.5	0.51 (0.33–0.79)*	79.5	1.05 (0.63–1.73)	74.7	0.64 (0.36–1.15)
Education						
≤ 12 years	67.7	0.64 (0.47–0.88)*	78.3	0.91 (0.64–1.31)	80.5	0.73 (0.49–1.10)
> 12 years (reference)	76.6	–	79.8	–	84.0	–

* P-value<.01 CI = confidence interval; AOR = adjusted odds ratio; NHW= Non-Hispanic White

The outcome variable, receipt of preventive dental care in the past 12 months, was cross-referenced with self-reported diabetes status (coded from the question: "Have you ever been told by a doctor that you have diabetes, other than during pregnancy?"), selective demographic variables (gender, age, race/ethnicity and educational attainment), and dental care coverage. Since oral healthcare use is strongly associated with having teeth, and diabetes, particularly Type II, is highly prevalent among middle-aged and older adults, analyses were restricted to dentate adults age 45 years and older (n=10,355).

Bivariate analyses using the chi-square test were done to identify any significant differences between diabetes status and co-variables with respect to adults' receipt of preventive dental care in the past year. Multiple logistic regression analyses were also conducted to determine important predictors of the outcome variable, controlling for possible confounders and other correlates. Finally, associations between preventive dental care and demographic variables among adults with diabetes were compared with receipt in the preceding year of two other recommended diabetes management and care interventions: foot check (having feet checked for any sores or irritations by a health professional in the past 12 months) and dilated eye examination (having an eye examination in which the pupils were dilated in the past 12 months).

Data were weighted to the probability of selection and adjusted to reflect the age, gender, and race/ethnicity of Rhode Island's adult population. The statistical significance was tested at P<0.05. SAS survey procedures were used for the analyses in the study to account for the complex sampling design.

Results

In the BRFSS years of 2006, 2008 and 2010 combined, 11.0% (95% Confidence Interval (CI): 10.3%–11.7%) of Rhode Island dentate adults age 45 years and older were estimated to have diagnosed diabetes. Among them, 72.7% (95% CI: 69.7%–75.8%) received a dental checkup or teeth cleaning in the past year. The proportion was significantly lower than that of adults who did not have a diabetes (83.5%, 95% CI: 82.6%–84.4%, p<.0001) (Table 1). The difference by diabetes status persisted across all subgroups of adults, even among individuals who attained a higher than high school education or adults who had any type of dental coverage. Therefore, data supports the conclusion that diabetes status adversely affected the rate of preventive dental care.

The prevalence of dental care at least once a year among adults with diabetes was lower than those for foot checks (79.2%, 95% CI: 76.3%–82.1%) or eye examinations (82.4%, 95% CI: 79.4–85.3%) (Table 2). The results of the multiple logistic regression analysis show that race/ethnicity or education level independently affects the likelihood of having received dental care. Racial/ethnic minority adults (OR=0.51, 95% CI: 0.33–0.79) or those who had high school or lower educational attainment (OR=0.64, 95% CI: 0.47–0.88) had lower odds of having received preventive dental care in the past year than their adult counterparts, when controlled for other variables. The prevalence of foot checks or eye examinations did not indicate a similar disparity by race/ethnicity or educational level.

Discussion: Opportunities to improve oral health care for all adults with diabetes

Adults with diabetes are more susceptible to periodontal disease and other oral health conditions that would require more frequent dental visits than adults without diabetes concerns. It was anticipated that adults with diabetes would be more likely to obtain dental care as a part of diabetes management and care. However, according to the 2006, 2008 and 2010 BRFSS findings, the utilization of preventive dental care among Rhode Island adults with diabetes was lower than among adults without diabetes. Among adults with diabetes, racial/ethnic minority adults or those who had lower educational attainment had lower odds of receiving dental care. The disparity by race/ethnicity or educational level is pronounced for dental care, as compared with other diabetes care practices, such as foot check and eye examination.

There could be several multi-faceted reasons behind this finding. Individuals with diabetes may be unaware of the importance of maintaining good oral health as part of their diabetes management plan, and often do not perceive a need to visit a dentist.[9] For some patients, particularly the publicly-insured, limited access to oral health services due to a lack of or inadequate insurance coverage is a major barrier that may prohibit patients with diabetes from seeking preventive oral health care.

Medical and oral health providers do often miss opportunities to explain and educate about oral health-diabetes interaction to their patients with diabetes. Medical providers diagnose and monitor glycemic control and complications of diabetes, but may not screen risk of oral diseases or refer patients for oral health care. Dental providers are not usually part of interdisciplinary diabetes management team with other medical providers, including primary care providers, endocrinologists, podiatrist, and ophthalmologists/optometrists.

Developing strategies to address less than optimal oral health care among adults with diabetes can lead to improved overall health outcomes, including greater diabetes control, management and a reduction in diabetes-associated complications. The Rhode Island Department of Health recommends that all stakeholders support and undertake the following objectives:

- Improve the awareness of the bi-directional link between diabetes and oral health among people with diabetes, health care providers, and the general public;
- Train and educate non-oral health professionals involved in diabetes care about the importance of oral health care anticipatory guidance and referrals;
- Include oral health care in diabetes management and care;
- Promote policy change to improve access to routine and preventive oral health care of all adults with diabetes, especially racial/ethnic minorities, adults with lower education and income, and those who lack dental insurance; and
- Expand partnerships between organizations focused on diabetes care and oral health.

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Disclosure of Financial Interests

Authors and/or their spouses/significant others do not have financial interest to disclose related with this study.

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Information for Contributors

Medicine & Health/Rhode Island is peer-reviewed, and listed in the *Index Medicus*. We welcome submissions in the following categories:

Contributions
Contributions report on an issue of interest to clinicians in Rhode Island: new research, treatment options, collaborative interventions, review of controversies. Maximum length: 2500 words. Maximum number of references: 15. Tables, charts and figures should be submitted as separate electronic files (jpeg, tif, or pdf). Each submission should also be accompanied by a short (100-150 words) abstract.

Creative Clinician
Clinicians are invited to describe cases that defy textbook analysis. Maximum length: 1200 words. Maximum number of references: 6. Photographs, charts and figures may accompany the case.

Point of View
Readers share their perspective on any issue facing clinicians (e.g., ethics, health care policy, relationships with patients). Maximum length: 1200 words.

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Authors discuss new treatments. Maximum length: 1200 words.

Advances in Laboratory Medicine
Authors discuss a new laboratory technique. Maximum length: 1200 words.

Images in Medicine
Authors submit an interesng Image, with a 300-400 word explanation.

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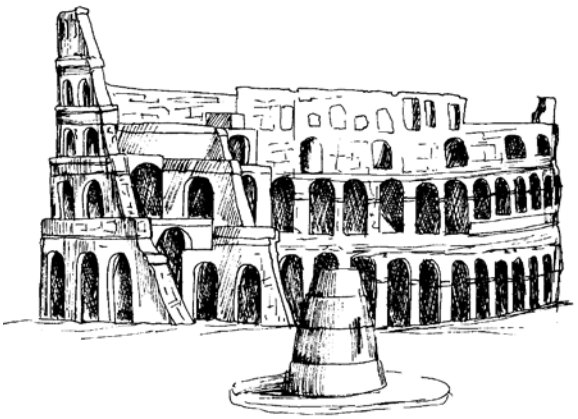

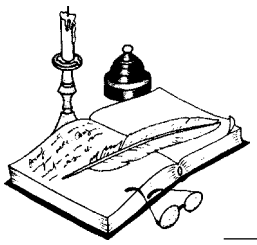

Physician's Lexicon

Causes, Cases and Casuistries

From its remote beginnings as an independent profession, medicine has consistently doubted that tangible events might ever arise without a preceding cause. Whether it be a biologic characteristic, a disease or even a pregnancy, some antecedent stimulus, lesion or event must have been operative. And thus the concept of causality has become fundamental to the practice of medicine. Nothing arises, said the Romans, from nothing.

The noun, cause, descends directly from the Latin, *causa*, meaning purpose or reason. Its earlier origins are in doubt but some believe that it may have stemmed from the Latin, *caud-ta*, meaning to beat and hence related to the Latin, *cudere*, meaning to strike, to pound upon a surface. English words such as accusative, recusant and excuse are thus all indirectly related to *causa*.

But words such as caustic and causalgia (a burning pain) come from the Greek *causticus*, meaning corrosive or capable of burning. And the *–algia* suffix (as in neuralgia, myalgia or nostalgia) is also from the Greek, meaning to experience pain.

Case, the noun, (meaning an instance or finite occurrence as in the phrase "this is a case of leprosy") is from the Latin, *casus*, meaning a condition or an instance, and is further related to the Latin *cadere*, meaning to fall or to happen, as in the English, cadence. *Cadere* is also the basis for English words such as cadaver, cascade, decadence, occasion.

The Latin, *casus*, is also the antecedent to English words such as chassis, caisson, cash, capsule and casket. And an event causing a war is hence defined as a *casus belli* (which is morally distinguishable from *cause celebre*.)

Casual, as an adjective, is derived from the Latin, *casualis,* meaning fortuitous or accidental.

And then there is the variously employed word, casuistry, generally meaning the application of basic ethical principles to the unraveling of moral dilemmas. The word, casuistry, has taken on a pejorative sense since casuistic reasoning was/is often employed for less than moral purposes. And casuistry has currently come to signify clever but specious reasoning in confronting problems of law, religion or ethics.

– Stanley M. Aronson, MD

Rhode Island Department of Health
Michael Fine, MD
Director of Health

Vital Statistics

Edited by Colleen Fontana, State Registrar

Rhode Island Monthly Vital Statistics Report Provisional Occurrence Data from the Division of Vital Records

Underlying Cause of Death	Reporting Period			
	March 2011	12 Months Ending with March 2011		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	242	2,358	223.9	3,532.0
Malignant Neoplasms	188	2,314	219.7	5,821.5
Cerebrovascular Diseases	34	449	42.6	704.5
Injuries (Accidents/Suicide/Homicide)	63	633	60.1	9,653.0
COPD	61	543	51.6	477.5

Vital Events	Reporting Period		
	September 2011	12 Months Ending with September 2011	
	Number	Number	Rates
Live Births	1,038	11,833	11.2*
Deaths	749	9,944	9.4*
Infant Deaths	(6)	(71)	6.0#
Neonatal Deaths	(2)	(64)	5.4#
Marriages	904	6,292	6.0*
Divorces	297	3,354	3.2*
Induced Terminations	372	4,049	342.2#
Spontaneous Fetal Deaths	46	666	56.3#
Under 20 weeks gestation	(37)	(576)	57.9#
20+ weeks gestation	(9)	(88)	7.4#

(a) Cause of death statistics were derived from the underlying cause of death reported by physicians on death certificates.

(b) Rates per 100,000 estimated population of 1,053,209. (www.census.gov)

(c) Years of Potential Life Lost (YPLL).

Note: *Totals represent vital events that occurred in Rhode Island for the reporting periods listed above. Monthly provisional totals should be analyzed with caution because the numbers may be small and subject to seasonal variation.*

* Rates per 1,000 estimated population
\# Rates per 1,000 live births

THE RHODE ISLAND MEDICAL JOURNAL
The Official Organ of the Rhode Island Medical Society
Issued Monthly under the direction of the Publications Committee
VOLUME 1
NUMBER 1
PROVIDENCE, R.I., JANUARY, 1917
PER YEAR $2.00
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Ninety Years Ago, March, 1922

George Matteson, MD, FACS, of Providence examines the treatment of peptic ulcers. He begins by noting the back and forth between internist and surgeon in regards to whose domain it mainly falls. While surgical treatments had enjoyed some success around 1905, there were still instances in which cases failed to respond satisfactorily. Nonsurgical treatments are discussed as well as proposed limits to surgical treatments to certain types of cases. While surgeons question purely medical measures, they acknowledge that early ulcers may benefit from such treatment assuming the condition is discovered while it is truly early. As surgeons and internists continue to debate best practices, concessions have, at least, been made to avoid extreme positions. One such concession is recognizing the importance of dietetic supervision after an operation and ceasing to point with pride at post-operative patients who "can eat anything" even before they leave the hospital.

The question as to whether or not chiropractors practice medicine or not is revisited in an editorial. In this case, a legislative bill was introduced that would establish a special board to license chiropractors in Rhode Island. The definition of "medicine" is discussed and whether or not chiropractic practice falls within that definition. A supporter of the legislation, a professor in one of the chiropractic schools, contended that chiropractors should not come under the State Board of Health because chiropractics was not the practice of medicine, but an entirely new branch of science different from the practice of medicine. This does not appear to stop some chiropractors from making diagnoses and recommending their own brand of treatments for such. The editorial concludes with noting a recent decision by the Utah Supreme Court which reads: "The right given to the board of medical examiners is not for the benefit or protection of the members of the medical fraternity, but rather for the creation of a method of procedure to protect the health of the community.

Fifty Years Ago, March, 1962

J. John Yashar, MD presents a paper on lung biopsy and begins with a look at past usages of lung biopsy for diagnosis including its benefits and risks. He then goes on to discuss technique and case histories involving lung biopsies and the various results. While noting that for some groups of patients, lung biopsy offers a quick and efficient method of establishing the diagnosis and may avoid prolonged and costly hospitalization, it is more recommended only where the usual measures have failed to establish the diagnosis.

A program for the Sesquicentennial Meeting of the Rhode Island Medical Society is presented. Among the scheduled events are: "One Hundred and Fifty Years of Medical Practice in Rhode Island – a Symposium of the History of the Rhode Island Medical Society," "Chronic Bronchitis and Emphysema," and the Fisk Prize essay entitled "Current Status of Open Heart Surgery."

The Federal Trade Commission launches a broad investigation of cold remedies to determine whether their advertising overstates their effectiveness. 24 major manufacturers (list undisclosed) were sent questionnaires. The answers will enable the Commission to make a comprehensive review of problems throughout the entire field and will assist in evaluating scientific evidence claimed for the medicinal preparations, and whether any advertising is in violation of the Federal Trade Commission Act.

Twenty-five Years Ago, March, 1987

George K. Boyd, MD, S.G. Chamberlain, RN, and B.A. Howard, BSN, look at the efficacy of purified venom therapy for hymenoptera allergy and review their recent experience in elevating 299 patients for apparent anaphylactic reactions to stinging insects. The go over definitions, demographics, patient selection, and using anaphylaxis as a basis for early selection of candidates for venom immunotherapy, divided them into four grades ranging from local reaction of severity to total vasomotor collapse, shock, and possible cardiac arrest. The authors conclude by making several recommendations based on their review. Among those conclusions are the recommendation of patients with Grade 2, 3, or 4 reactions should always have an emergency epinephrine kit available, that expected systemic reaction prevention for venom-treated patients now approaches 98 percent, and that the eventual discontinuation of all immunotherapy after four or five years of therapy will probably be possible in the future for a large number of patients.

David B. Abrams, PhD, looks at new behavioral treatments for controlling tobacco addiction which prompt a sense of cautious optimism. He studies various treatment strategies and methods of evaluation for patients looking to quit smoking. Cases of self-help or minimal intervention only have meager success rates, although he notes that certain self-help materials, such as those provided by the American Cancer Society, are more effective than others. Hypnosis, acupuncture and brief commercial interventions are difficult to evaluate because of the lack of objective data. Repeated programs, even those involving hypnosis or interventions, are likely more effective than "one shot" programs. Formal behavioral-based treatment programs must address, in addition to quitting smoking, coping with acute withdrawal and relapse prevention. The author notes that even a small amount of physician time can make a large impact in helping patients to become motivated for quitting and then to take action, quit, and resist relapse. Helping patients to quit smoking will, over the next 30 years, make the single largest impact on reducing chronic disease and disability in the United States. A smoke-free America by the year 2000 is a worthy goal.

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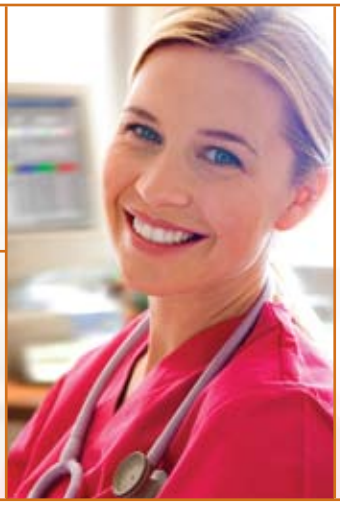

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