

THE AFIB REPORT

Your Premier Information Resource for Lone Atrial Fibrillation!

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I hope a good summer has been had by all. In this issue we feature a success story by Gene Beall. Gene began his afib "career" in 1998 when he was diagnosed with atrial flutter. After two ablations his flutter disappeared only to be replaced by atrial fibrillation! After being prescribed the wrong drug which only made his afib worse, and refusing to have a pacemaker installed, he finally decided that he had to take responsibility for his own health. Luckily he found a GP who would work with him on a protocol which has allowed him to be afib-free for the past 31 months. Gene's story is a poignant, sometimes humorous, reminder that, in order to "tame the beast", we must all take responsibility for our own health rather than just meekly follow doctor's orders. Thanks Gene for sharing your experience.

Also in this issue we report that pre-ablation transesophageal echocardiography may not be necessary for paroxysmal and persistent lone afibbers with no risk factors for stroke, that a high birth weight increases the risk of atrial fibrillation, that 90% of all strokes can be related to 10 distinct risk factors, that an elevated level of C-reactive protein is strongly associated with increased mortality, and a team of Japanese researchers reports a new protocol to substantially improve the success rate for pulmonary vein isolation procedures.

Finally, if you need to restock your supplements, please remember that by ordering through my on-line vitamin store you will be helping to defray the cost of maintaining the web site and bulletin board. You can find the store at <http://www.afibbers.org/vitamins.htm> - your continuing support is truly appreciated.

Wishing you good health and lots of NSR,

Hans

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(Tambocor) with water as soon as possible after the onset of an episode. The dosages are increased to 600 mg and 300 mg respectively for patients weighing more than 70 kg (154 lbs). It is recommended that patients rest (in a supine or sitting position) until palpitations have stopped or at least 4 hours have passed.

Italian cardiologists now report the case of a 76-year-old woman who fainted 3 hours after taking 600 mg of propafenone to terminate an afib episode. After admission to the emergency department she was found to have left bundle branch block and a first degree atrioventricular block both of which eventually disappeared on their own. The cardiologists noted that the patient was taking the beta-blocker carvedilol (Coreg) on a permanent basis. They surmise that the combination of propafenone and carvedilol produced an abnormally high plasma concentration of propafenone resulting in the transient left bundle

Pill-in-the-pocket warning

BOLOGNA, ITALY. The on-demand or "pill-in-the-pocket" approach is now used by many paroxysmal afibbers to quickly and effectively terminate afib episodes and return to normal sinus rhythm. This approach involves swallowing 450 mg of propafenone (Rythmol) or 200 mg of flecainide

branch and atrioventricular blocks. Both propafenone and carvedilol are metabolized in the liver through the CYP2D6 pathway. They also noted that the patient fainted 3 hours following the ingestion of the propafenone which would correspond to the time at which propafenone reaches its peak plasma concentration. They conclude that the “pill-in-the-pocket” approach (with propafenone) should not be used in patients who are taking carvedilol on a permanent basis.

Boriani, G, et al. Atrial fibrillation: Adverse effects of “pill-in-the-pocket” treatment and propafenone-carvedilol interaction. International Journal of Cardiology, Vol. 140, No. 2, April 15, 2010, pp. 242-3

Editor’s comment: The authors make no comment in regard to the safety of using flecainide on demand in patients permanently on carvedilol. However, as CYP2D6 is also involved in the metabolism of flecainide, caution should probably be advised. It is interesting that CYP2D6 (cytochrome P450 2D6) is involved in the metabolism of about one quarter of all pharmaceutical drugs including Paxil, Effexor, metoprolol, bisoprolol and atenolol. This certainly raises an interesting question about the advisability of combining flecainide or propafenone with a beta-blocker in a “new and improved” pill-in-the-pocket approach.

Is transesophageal echocardiography necessary?

LONDON, UNITED KINGDOM. It is now common practice to perform transesophageal echocardiography (TEE) on patients scheduled to undergo catheter ablation with the intent of curing atrial fibrillation (AF). The purpose of the TEE is to check for thrombi (blood clots) in the left atrium and left atrial appendage (LAA) since such thrombi can migrate to the brain during or immediately after the ablation procedure resulting in an ischemic (cardioembolic) stroke. A group of researchers at the University College Hospital in London now report the results of a study aimed at determining whether it is necessary to do a TEE on all patients scheduled for ablation, or whether certain groups of patients can avoid this rather uncomfortable procedure.

The study involved 635 patients who underwent TEEs and AF ablation procedures over a 4-year period. About 50% of the patients had persistent afib with the remainder having the paroxysmal variety. All patients were treated with warfarin (INR of 2 to 3) for at least 4 weeks prior to their TEE. Despite this, 12 out of the 635 patients (1.9%) were found to have thrombus at the time of their TEE. Initial (univariate) analysis showed that a large left atrium diameter, persistent AF, hypertension, age over 75 years, and cardiomyopathy were all associated with an increased risk of thrombi (all found in the LAA). However, a multivariate analysis showed that only hypertension, cardiomyopathy and age greater than 75 years were associated with an increased risk of thrombi.

It is of interest to note that no thrombi were found in patients without CHADS₂ risk factors for ischemic stroke (age > 75 years, hypertension, heart disease, diabetes and history of TIA or ischemic stroke). It is also important to note that an enlarged left atrium and the presence of persistent afib did not increase the risk of thrombi in the left atrium and LAA. Other research has shown that an enlarged left atrium does not increase the risk of stroke in AF patients.

Another study involving 732 patients observed a 1.6% incidence of thrombi and concluded that a CHADS₂ score of 2 or more and a left atrial diameter greater than 4.5 cm are independent risk factors for thrombi in the left atrium or LAA. Based on their own and other’s findings, the authors conclude that TEE should be performed prior to ablation on all patients with risk factors for thrombi, but may not be needed in the case of anticoagulated patients (paroxysmal or persistent) with no clinical risk factors.

McCready, JW, et al. Incidence of left atrial thrombus prior to atrial fibrillation ablation: Is pre-procedural transesophageal echocardiography mandatory? Europace, Vol. 12, 2010, pp. 927-32

Verheugt, FWA, et al. Oral anticoagulants before and ablation for atrial fibrillation. Europace, Vol. 12, 2010, pp. 913-14

Editor’s comment: This study confirms that paroxysmal and persistent lone afibbers with no risk factors for stroke have a very low to non-existent risk of harbouring thrombi in the left atrium and LAA and thus can forego a pre-ablation TEE without increasing their risk of stroke associated with the procedure.

Birth weight associated with AF risk

BOSTON, MASSACHUSETTS. It is well established that a low birth weight is associated with an increased risk of developing heart disease and diabetes. Now a group of researchers from Brigham and Women's Hospital, Harvard Medical School and the University Hospital, Basel, Switzerland report that a high birth weight is associated with an increased risk of developing atrial fibrillation (AF) later in life.

Their study involved 27,982 white, female health professionals who were over 45 years old at enrolment in 1993. They were all free of heart disease and AF at baseline. During an average follow-up of 14.5 years, 735 women (2.6%) developed AF. The researchers observed a clear relation between birth weight and AF. Women with a birth weight of 2.5 kg (5 lb 8 oz) or less had an age-adjusted incidence of 1.45 per 1000 person-years of follow-up, while women with a birth weight greater than 3.9 kg (8 lb 10 oz) had an age-adjusted incidence of 2.56 per 1000 person-years.

Thus women with a high birth weight had a 75% greater risk of developing afib than did those with a low birth weight. This association persisted even after adjusting for such confounding variables as cholesterol level, smoking, physical activity level, alcohol consumption, level of education, race, hormone replacement therapy, body mass index (BMI), blood pressure, and the presence of diabetes.

However, when adjusted for adult height and maximum body weight between the ages of 18 and 30 years, the relationship between birth weight and AF risk was no longer statistically significant. The authors speculate that this may be because birth weight is an important determinant of adult height and body size. They conclude that birth weight is significantly associated with the risk of developing afib suggesting that early life determinants may play an important role in the pathogenesis of atrial fibrillation. They also suggest that the increasing number of newborns with elevated birth weight may be partly responsible for the increasing incidence of AF in the general population.

Conen, D, et al. *Birth weight is a significant risk factor for incident atrial fibrillation.* **Circulation**, Vol. 122, August 24, 2010, pp. 764-70

Frost, K and Olsen, J. *Birth weight and atrial fibrillation – a causal link?* **Circulation**, Vol. 122, August 24, 2010, pp. 759-60

Editor's comment: An association between elevated birth weight and atrial fibrillation was first reported in LAF Survey 14 carried out in 2007. The survey found that afibbers who were able to control their afib (Group A) had a median birth weight of 3.28 kg (7 lb 3 oz), while those whose condition worsened (Group B) had a median birth weight of 3.7 kg (8 lb 2 oz). Patrick Chambers, MD, a frequent poster in the early days of the Bulletin Board, followed up on this and other findings in an additional survey. See his report at <http://www.afibbers.org/LAFvsAF.pdf> which was discussed extensively on the Bulletin Board at http://www.afibbers.net/forum/read.php?f=6&i=13743&t=13743#reply_13743. Based on his findings he wrote the article "Lone Atrial Fibrillation: Pathologic or Not?" which was published in *Medical Hypotheses* and further discussed in Conference Room Session 55. See <http://www.afibbers.org/conference/session55.pdf>. Dr. Chambers concluded that lone and heart disease-related AF can be distinguished based on weight, height, hip and waist measurements. In relation to the birth weight finding in LAF Survey 14, he pointed out that a higher birth weight such as found in Group B is associated with increased baroreflex sensitivity[1] and that an increased baroreflex sensitivity, in turn, is associated with more difficulty in dealing with sudden changes in autonomic tone that could lead to an afib episode. Thus, it may well be that lone afibbers can be divided into two groups - those (like in Group A) whose main underlying problems are magnesium deficiency, wheat sensitivity, etc. and those (like in Group B) whose main underlying problem is an increased baroreflex sensitivity. Clearly, it would be much easier to correct a magnesium deficiency than an increased baroreflex sensitivity, perhaps explaining why "nothing worked" for Group B. It is also intriguing to speculate that the reason why mixed type afibbers (neither pure adrenergic nor pure vagal) have a more difficult time reducing their afib burden could be that they have increased baroreflex sensitivity. Hopefully, medical researchers will some day cast more light on this finding.

[1] Leotta, G, et al. Effects of birth weight on spontaneous baroreflex sensitivity in adult life. *Nutrition, Metabolism and Cardiovascular Diseases*, Vol. 17, May 2007, pp. 303-10

Risk factors for stroke

HAMILTON, ONTARIO, CANADA. The recent INTERHEART study observed that the presence of 9 modifiable risk factors is associated with 94% of all myocardial infarctions (heart attacks) experienced by men and women. Now researchers from 22 countries involved with the recently completed INTERSTROKE study report that 90% of all strokes (ischemic and hemorrhagic) are associated with one or more of 10 risk factors. The INTERSTROKE study determined the prevalence of the 10 risk factors in 3000 patients who had suffered a first stroke (78% ischemic and 22% hemorrhagic) and compared it to the prevalence in 3000 age- and gender-matched controls who had never suffered a stroke. Patients and controls came from Africa, India, Southeast Asia, South

America, as well as from more affluent countries such as Australia, Canada, Denmark, and Germany.

The researchers calculated the population-attributable risk (PAR) for each risk factor for ischemic stroke, that is, the reduction in stroke incidence if that risk factor was eliminated. They also calculated the odds ratio (OR) for each risk factor. An OR of 1 implies that having a stroke is independent of the risk factor, while an OR of 2 implies that people having that risk factor are twice as likely to have a stroke than are those in which the risk factor is not present. The most important risk factors (ranked by PAR) for ischemic stroke were found to be:

<u>PAR</u>	<u>Risk Factor</u>	<u>OR</u>
45.2%	Hypertension	3.1
35.2%	High ratio of apolipoprotein B to apolipoprotein A1	2.4
29.4%	Lack of physical exercise	**
26.0%	High waist to hip ratio	1.7
21.4%	Current smoking	2.3
17.3%	Unhealthy diet	1.3
8.5%	Cardiac causes (1)	2.7
7.9%	Diabetes	1.6
6.8%	Depression and stress	1.5
**	Excessive alcohol consumption	1.4

** data not available

(1) atrial fibrillation and flutter, valve disease, rheumatic heart disease, and previous heart attack

The presence of hypertension tripled the risk of stroke, while smoking and high apolipoprotein ratio more than doubled it. A high waist to hip ratio was associated with a 69% increase, while excessive alcohol consumption (binge drinking or more than one drink a day) increased risk by 41%. Regular physical activity, on the other hand, was associated with a 32% decrease in risk.

Hypertension was also by far the most important risk factor for hemorrhagic stroke with a blood pressure higher than 160/90 mm Hg increasing risk by a factor of 9. Diabetes, depression, cardiac causes, and apolipoprotein ratio were not risk factors for hemorrhagic stroke, while regular physical activity was associated with a decreased risk of hemorrhagic stroke.

It is interesting that a high total cholesterol level was not associated with the risk of ischemic stroke, but

was associated with a reduced risk of hemorrhagic stroke. The opposite held true for increased HDL (high-density lipoprotein) concentration.

The researchers conclude that 10 risk factors are associated with 90% of all strokes and that intervention to reduce blood pressure, eliminate smoking, and promote physical activity and a healthy diet could substantially reduce the incidence of stroke.

O'Donnell, MJ, et al. Risk factors for ischemic and intracerebral hemorrhagic stroke in 22 countries (the INTERSTROKE study). The Lancet, Vol. 376, July 10, 2010, pp. 112-23

Editor's comment: It is certainly a sobering thought that up to 90% of all strokes are potentially preventable. It is also interesting that atrial fibrillation plays a relatively minor role in the overall risk picture for ischemic stroke and plays no role at all as far as risk for hemorrhagic stroke are

concerned. The finding that a high total cholesterol level is not a risk factor for ischemic stroke and may be protective against hemorrhagic stroke is probably unexpected. A high waist to hip ratio is clearly an important risk factor for both types of stroke. In this regard, it is interesting to note the finding by Patrick Chambers, MD that lone afibbers have lower waist to hip ratios than do the general population.[1] This could help explain the low

stroke risk observed for lone afibbers. Finally, the study clearly confirms the very important role that physical exercise, a healthy diet, and no smoking play in avoiding a stroke.

[1] Chambers, PW. *Lone atrial fibrillation: Pathologic or not? Medical Hypotheses*, Vol. 68, No. 2, 2007, pp. 281-87

Association between C-reactive protein and mortality

COPENHAGEN, DENMARK. There is substantial evidence that atrial fibrillation (AF) is associated with an increased level of the inflammation biomarker C-reactive protein (CRP). It is, however, not clear whether inflammation causes AF or AF causes the inflammation indicated by an elevated CRP level. Danish researchers now report that an elevated CRP level also is closely associated with an increase in overall mortality.

Their study, the Copenhagen City Heart Study, enrolled 10,388 persons from the general population in the years 1991 to 1994. All participants underwent extensive blood testing at entry and were then followed for 16 years during which 3124 participants (30%) died. Participants that died were more likely to be men, elderly, smokers or suffering from diabetes or hypertension.

The researchers also noted that an elevated CRP level at baseline was a strong risk factor for early death. Participants with a CRP level exceeding 3.0 mg/L (0.3 mg/dL) were twice as likely to die prematurely than were those with a CRP level below 1.0 mg/L (0.1 mg/dL). A high CRP level was associated primarily with an increase in cardiovascular death, but an association with cancer-related deaths, and indeed death from any

cause, was also noted. No association between CRP level and mortality was found for individuals whose CRP level was permanently elevated because of a genetic mutation (polymorphism).

This finding caused the researchers to conclude that, while there is a clear association between elevated CRP and mortality, this is not due to the fact that CRP as such increases mortality, but rather due to the underlying inflammation revealed by the increase in CRP.

Zacho, J, et al. *C-reactive protein and all-cause mortality. European Heart Journal*, Vol. 31, 2010, pp. 1624-32

Editor's comment: The Danish study confirms that inflammation is a strong risk factor for early death. Thus it would seem prudent for everyone with an elevated CRP level to take steps to eliminate the inflammation causing the increase in CRP. Apart from cutting out obvious inflammation triggers such as alcohol and caffeine, it would also be prudent to refrain from vigorous exercise and workouts until the inflammation has subsided. Supplementation with natural anti-inflammatories such as *Moducare*, curcumin, beta-sitosterol or *Zyflamend* is also an essential step in eliminating systemic inflammation and reducing CRP level.

Antiarrhythmic therapy prior to ablation

TSUKUBA, JAPAN. Having been in permanent atrial fibrillation for an extended period is associated with a poorer outcome of catheter ablation. Japanese cardiologists/electrophysiologists now report that extensive antiarrhythmic therapy prior to ablation results in improved outcomes.

Their study included 51 permanent afibbers (7 women) aged between 36 and 74 years. All patients had been previously unsuccessfully treated

with class I (flecainide, propafenone) or class III (amiodarone) antiarrhythmic drugs (AADs). The mean duration of AF prior to enrolment was 36 months. Following enrolment all patients were prescribed a combination of amiodarone or bepridil (a calcium channel blocker) and a class I antiarrhythmic such as flecainide or propafenone. The most popular combination was flecainide and bepridil prescribed for 41% of patients.

An average of 1.5 months after initiation of the combined AAD therapy, 65% (33 patients) had converted to normal sinus rhythm (NSR), while the remaining 18 patients remained in afib (AF group). It was noted that fewer members (21%) of the NSR group had been in permanent AF for more than 3 years than in the AF group (44%). It was evident that members of the NSR group had experienced a significant increase in left ventricular ejection fraction, a decrease in left atrial diameter, and a reduction in plasma BNP level due to their successful AAD therapy. However, 4 patients (7.8%) experienced adverse effects from the AAD treatment, notably bradycardia and prolongation of QT interval.

After 3 months or more (average of 6 months) of combined AAD therapy, all study participants underwent a pulmonary vein isolation procedure including a right atrial flutter ablation (bidirectional block line at the cavotricuspid isthmus) and additional lesion sets as required (roof line, superior vena cava isolation, and ablation of complex, fractionated atrial electrograms). In the NSR group only 9% of ablatees required cardioversion at the end of the procedure, while in the AF group 39%

needed cardioversion to achieve normal sinus rhythm. No complications were observed during the 14-month post-ablation follow-up period. At the end of follow-up 61% of the patients in the NSR group and 22% in the AF group were still in NSR.

The authors conclude that restoration of normal sinus rhythm in permanent afibbers using a combination of class I and class III antiarrhythmics results not only in an improved ejection fraction, reduced left atrium size, and lower BNP concentration, but also markedly improves the outcome of catheter ablation.

Igarashi, M, et al. Effect of restoration of sinus rhythm by extensive antiarrhythmic drugs in predicting results of catheter ablation of persistent atrial fibrillation. American Journal of Cardiology, Vol. 106, 2010, pp. 62-68

Editor's comment: It certainly would seem worthwhile for permanent afibbers to consider going on the combination therapy while awaiting their ablation. NOTE: I am not sure why the Japanese researchers classify bepridil as a class III antiarrhythmic. As a calcium channel blocker it would normally be classified as class IV.

ATP challenge markedly improves ablation outcome

TOKYO, JAPAN. The average complete success rate (no AF, no antiarrhythmics) for 729 initial ablation procedures evaluated in the 2008 Ablation/Maze Survey was 50% for 15 top-ranked institutions and 21% of other institutions. After follow-up procedures the final complete success rates were 65% for top-ranked institutions (30% repeat rate) and 32% for other institutions (44% repeat rate).

Now Japanese researchers report that success rates can be markedly improved by attempting to induce atrial fibrillation 20 minutes after completing the initial procedure and then re-ablating in cases where afib recurs. It is common practice to pace the heart while infusing an isoproterenol solution when electrical isolation of the pulmonary veins from the left atrium has been achieved in order to attempt to induce AF associated with acute electrical reconnection of the veins to the atrium. Isoproterenol is a beta adrenergic agonist which can induce tachycardia and other arrhythmias. The novelty in the approach used by the Japanese researchers is that they also inject ATP (adenosine-5'-triphosphate) while pacing the heart and infusing

isoproterenol. ATP is a molecule which transports energy within cells to aid in metabolism.

In the Japanese study, the combination of pacing, isoproterenol, and ATP revealed dormant reconnection in 225 pulmonary veins (24% of the 928 veins originally isolated). In comparison, pacing and isoproterenol alone only revealed dormant reconnection in 3 veins (0.3% of originally isolated veins). Thus using a combination of isoproterenol and ATP to check for acute (dormant) reconnections is substantially more effective than using isoproterenol alone.

The study involved 144 patients with paroxysmal AF, 43 with persistent AF, and 46 with permanent AF. The median age of the group was 55 years, 88% were men, and only 9% had underlying structural heart disease; so this study group consisted essentially of typical lone afibbers. All participants underwent a segmental pulmonary vein isolation procedure (PVI) using a Lasso catheter for mapping. Patients with permanent (long-lasting persistent) AF underwent additional ablation targeting complex fractionated electrograms and

continuous electrical activity during ongoing afib. Those who had a history of right atrial flutter also underwent cavotricuspid isthmus ablation. Electrogram-based ablation was performed in all 46 patients with permanent AF and a right atrial flutter ablation was performed in 88 patients (37.8% of 233 patients).

At least 20 minutes after finishing the ablation and achieving electrical isolation of the targeted veins, the heart was paced and the ATP/isoproterenol infusion was begun. This procedure revealed dormant pulmonary vein conduction in 139 (59.7%) of the 233 patients. All 139 patients underwent additional ablation to close the gaps revealed by the ATP/isoproterenol infusion. During a follow-up averaging almost 3 years (903 days) 75% of paroxysmal afibbers and 46.1% of persistent and permanent afibbers remained in normal sinus rhythm (NSR) without the use of antiarrhythmic drugs (complete success) after their initial procedure. Thirty patients with paroxysmal AF and 41 with persistent or permanent AF underwent a repeat procedure (1 procedure for 65 patients and 2 for 6 patients). After the final procedure 95.1% of paroxysmal afibbers remained in NSR without the use of antiarrhythmics, while 83% of persistent and permanent afibbers achieved this enviable state. There was no difference in final outcome between patients who exhibited dormant pulmonary vein

conduction after the isoproterenol/ATP challenge and those who did not. Procedure-related complications (2 strokes, 2 tamponades, and 1 peripheral arteriovenous fistula) were observed in 5 patients (1.6%).

The researchers conclude that isoproterenol/ATP administration reveals dormant PV conduction in more than 50% of ablatees and that re-ablating the lesion set gaps thus uncovered can markedly improve long-term success rates for PVI procedures.

Matsuo, S, et al. Comparison of the clinical outcome after pulmonary vein isolation based on the appearance of adenosine-induced dormant pulmonary vein conduction. American Heart Journal, Vol. 160, August 2010, pp. 337-45

Editor's comment: The finding that using an ATP/isoproterenol challenge to reveal dormant pulmonary veins reconnections and eliminating them during the ablation procedure very markedly improves success rates of ablation, both in paroxysmal and persistent afibbers, is obviously of huge importance. It is to be hoped that other ablation centers will incorporate the ATP/isoproterenol challenge as a routine measure. It is of interest to note that doing so was associated with a relatively minor increase in overall procedure time to about 3.5 hours.

Sleep apnea affects ablation efficacy

BARCELONA, SPAIN. Obstructive sleep apnea (intermittent loss of breathing during sleep) is a common disorder affecting about 4% of middle-aged American men and about 2% of middle-aged American women. It is strongly linked to increasing age and obesity. Obstructive sleep apnea (OSA) is characterized by a collapse of soft muscle tissue in the throat leading to blockage, restricted airflow and ultimately deoxygenation of red blood cells. OSA can be diagnosed during a sleep study (polysomnography) and its severity is described via the apnea-hypopnea index (AHI), which represents the number of obstructive respiratory events per hour of sleep. An AHI of less than 10 is considered normal, an AHI of 10-20 is mild, 20-30 is moderate, and more than 30 events per hour characterizes severe OSA. OSA can usually be successfully treated by the use of a continuous positive airway pressure (CPAP) machine which supplies a constant, uninterrupted flow of air pressurized just enough to keep the airway open.

Cardiac arrhythmias are common in patients with OSA. They occur mainly at night, in contrast with arrhythmias in patients with structural heart disease, which occur mainly during daytime. A nighttime AF episode in an OSA patient starts out with a bradycardia (abnormally low heart rate) due to parasympathetic (vagal) hyperactivity followed by tachycardia (an abnormally high heart rate) as a consequence of awakening from sleep. Nighttime bradycardia and subsequent AF episodes in OSA patients can, in most cases, be avoided by the use of a CPAP machine. A recent study observed OSA in 49% of 151 patients with atrial fibrillation, so it clearly is not an uncommon cause of AF. A Mayo Clinic study concluded that among subjects under the age of 65 years the cumulative probability of developing afib was about twice as high in subjects with OSA as compared to those without OSA. It is also of interest to note that patients with OSA tend to have a greatly increased frequency of premature

ventricular beats (PVCs) during sleep as compared to the frequency during wakefulness. They also, in general, tend to have more ventricular ectopy (non-sustained ventricular tachycardia and ventricular bigeminy, trigeminy, and quadrigeminy). Again, treatment with a CPAP machine has been found to reduce ventricular ectopy quite substantially.

Now Spanish researchers report that patients with OSA and AF are substantially less likely to have a successful ablation than are those without OSA. Their study involved 174 consecutive AF patients (56% paroxysmal) who were scheduled to undergo a circumferential pulmonary vein isolation (PVI) procedure. All patients completed the Berlin Questionnaire (BQ) which is designed to discover the possible presence of OSA. Fifty-one of the patients (29.3%) had a high BQ score and underwent a sleep study (polysomnography). Of these patients 14.4% were found to have severe OSA (mean AHI of 54), and 9.8% had mild OSA (mean AHI of 18). Most patients (86%) had no underlying heart disease so were thus lone afibbers. However, structural heart disease was substantially more common among patients with OSA (28%) than among those without (11.3%). Hypertension was also much more prevalent among patients with severe OSA (64%) than among those without (34%) as was the presence of permanent AF (28% vs. 11.4%).

All patients underwent an anatomically-guided PVI procedure (Pappone protocol) with additional left atrium roof and posterior wall lesions as needed. Follow-up consisted of outpatient visits and 24- or 48-hour Holter monitoring at 1, 4, and 7 months following the ablation, and every 6 months thereafter. Patients were also encouraged to report symptomatic episodes if and when they occurred. Mean follow-up was 17 months.

Complete success rates (no AF, no antiarrhythmics) at one year following the initial procedure (Kaplan-Meier estimate) was 48.5% in the non-OSA group, 30.4% in the mild OSA group, and only 14.3% in the

severe OSA group. A second PVI was performed in 29.5% of the non-OSA group, 47.1% in the mild OSA group, and in 44% of those in the severe OSA group. Following the second procedure, final complete success rates were 68.8%, 43.8%, and 14.3% respectively.

The Spanish researchers conclude that severe OSA markedly reduces the likelihood of having a successful PVI procedure. They also note, albeit based on a very small sample, that using a CPAP machine prior to their PVI did not affect success rates among patients with severe OSA suggesting that once the damage (electrical and structural remodeling) to the atrium is done, CPAP cannot restore sinus rhythm. In an accompanying editorial, Dr. Christoph Stellbrink of the Bielefeld Medical Center in Germany points out that patients in the severe OSA group were generally older, more likely to be obese, and more likely to have hypertension, structural heart disease and permanent AF. Thus, severe OSA may not have been the only cause for the poor ablation efficacy in this group of patients.

*Matiello, M, et al. Low efficacy of atrial fibrillation ablation in severe obstructive sleep apnea patients. **Europace**, Vol. 12, 2010, pp. 1084-89*

*Stellbrink, C. Arrhythmia recurrence after ablation of atrial fibrillation: should we be concerned about sleep apnea? **Europace**, Vol. 12, 2010, pp. 1051-52*

Editor's comment: It is clear that severe OSA is not only a risk factor for the development of AF, but may also reduce the chance of a successful PVI procedure. Furthermore, there is evidence as seen from LAF Survey 14 that afibbers with sleep apnea can substantially reduce their afib burden through the use of a properly calibrated CPAP machine. There is also some evidence that weight reduction and cessation of alcohol consumption can reduce the severity of OSA. Thus afibbers who have interrupted sleep, daytime sleepiness, or a greater incidence of PVCs (measured on a Holter monitor) during the night might do well to consider a properly conducted sleep study and the use of a CPAP machine if indicated.

MY TRIP TO THE LAND OF NSR

by Gene Beall

It all started in 1998 when I was diagnosed (EKG) with atrial flutter. I was 64 years of age and happily into my 6th year of retirement. I am a 6' 3", 250 lb white male, 75 years old as I write this, July 2010.

After the diagnosis I was cardioverted ("Better living through electricity!") and prescribed 7.5 mg/day of Coumadin and Toprol XL 25 mg twice a day and sent home. I was flutter-free for about 6 months and then my flutter returned. I made another trip to our small rural hospital and was once again converted. However, the doctor that did the first conversion, a GP, was on a sabbatical, so I was assigned to what I call a "Circuit Rider Doctor", one that goes from hospital to hospital seeking patients for his home hospital. I was informed that this doctor was the "head cardiologist in the southeast". I agreed to his services. The last thing I remembered, before going under, was the doctor asking the lead nurse "Where is the power switch?" – at least I did wake up, I am thankful for that!

After undergoing many tests (echocardiography, before and after stress testing, EKGs, Holter monitors, and blood work) which revealed no underlying heart problems, the cardiologist suggested that I should consider an RF ablation at his hospital over a hundred miles away.

So, in 2000 I underwent the ablation to stop the atrial flutter. However, the ablation did not fix the problem and I was still on Toprol and Coumadin. I had several flutter episodes but always converted on my own, sometimes aided by taking half a 25-mg Toprol; this worked at times and other times it did not. The events would last only about an hour or two and were rather few and far between, maybe one a month, nothing that caused me any great concern. I would, at times, take half of a 25-mg Toprol before I did any hard work, which seemed to help in preventing an event.

In November 2001 I experienced a rather long event lasting 6 hours and went to my GP at the hospital, where I was admitted, but as my cardiologist was over 100 miles away I was taken by ambulance to his hospital. I informed my GP and the ER folks that I would be in NSR before I got to the hospital and I did, in fact, convert on my own.

The next day my cardiologist suggested that I have a second ablation. Now that made me rather nervous as I did not want to go through another procedure. I asked what was different with this ablation versus the first one, and he said this was a new and better way to ablate, much better mapping with more precision, better EPs, etc. I agreed, so on November 8th 2001 I had a second, "much better", RF ablation. Three days later, after having returned home, I had another arrhythmia episode, but this time it was the dreaded atrial fibrillation. Yes, my flutter was gone only to be replaced with afib!

I was still on Toprol and Coumadin, and now experiencing an afib event about once a month still converting on my own, or with the help of half a 25-mg Toprol that worked sometimes.

I saw both my GP and my cardiologist about every six months until the "head cardiologist" stopped his visits to our hospital. A new cardiologist did join our local hospital which, at the time, was great news to me. This was in 2005.

Let me say that, at no time was I told just what type of afib I had, nor what were "triggers", with the exception of caffeine, and I was not smart enough to ask any questions; however that was about to change.

I had ordered Hans Larsen's books "*LONE ATRIAL FIBRILLATION: Towards a Cure*", after finding his web site and forum. I started reading Volume 1 and what an eye-opening experience! On further reading I came to the conclusion that I had lone, vagal afib – information I had never received from my doctors. In December 2001 I

started supplementing as suggested in Hans' books with the following regimen in addition to the Toprol and Coumadin:

- Magnesium, 500 mg
- Potassium, 500 mg
- Vitamin C, 1000 mg, b.i.d. (twice a day)
- Vitamin D, 800 IU
- Vitamin E, 400 mg
- CO Q10, 150 mg b.i.d.
- Omega-3 Fish Oil, 1000 mg b.i.d.
- Niacin, 500 mg
- Aspirin, 81 mg

The frequency of my afib episodes began to decrease – total events in 2002 was “only” 14, then only one in June 2003, and again only one in December 2004 lasting about 2 hours each and self-converting. Were the supplements and the ablations starting to work? Two events in two years I could live with.

Things were about to change. In 2005 my new cardiologist and I decided to try and find out if we could come up with a cure for my afib. He prescribed Cardizem 240 mg once a day, but I stopped taking it as it was causing me to almost blackout while driving. Up until this time my afib episodes had been manageable. However, I did notice a new problem; my heart was missing beats.

I tried talking to my cardiologist about information from Hans' books. Not only would he not look at the book he would not even touch it, sort of reeling back from it as if it were a snake. That should have been a clue, but I was still in the learning mode. I did as I was instructed. (In my opinion the most dangerous three words you can say are, “YOU'RE THE DOCTOR”.)

At one of my checkups, I asked, “Why do I urinate so much when I have an afib episode?” The doctor turned and looked at his nurse and said, “You know I have heard that before” – that was his only answer. (See Hans' book Volume 1 page 19 for the answer). This should have been clue number 2, but I kept on trying to find a cure with him.

In 2005, I had 9 episodes with 5 events being in August alone. Things were definitely going in the wrong direction and, unfortunately, were about to get much worse.

On December 3rd 2006, I had a 10-hour event and on December 6th I was admitted into the hospital for observation, and placed on Sotalol 80 mg two times daily (b.i.d.). Overall I experienced 9 afib episodes in December lasting a total of 27.5 hours.

On January 31st 2007 I had a 13-hour event, starting at 5:15 AM and lasted until 6:30 PM. The doctor increased my Sotalol to 120 mg b.i.d.

In February I had 2 events totalling 2 hours and in March 4 events lasting 4 hours total. At this time I decided to reduce the Sotalol to 80 mg b.i.d.

In the period April to July I experienced 23 episodes lasting a total of 30 hours. During August I had 15 episodes, and on the 15th I had my first triple-event day. Following this, I again cut back (on my own) on the Sotalol to 40 mg b.i.d. My reason for reducing the Sotalol was that the increased dose was not making things better. Total time spent in afib in August was 12 hours. At this time, I decided to discontinue Coumadin and rely on nattokinase for stroke prevention. Not an easy decision to make.

September was not much better with 20 events, 31 hours total time in afib, with my second three-event day in 24 hours. On September 27th I was placed on a Holter monitor and the cardiologist, after reading the results, said

“You need a pace maker!” I said “I do not want one”, and he said “I want you to have one” rather forcefully, and I said “I DO NOT WANT ONE” rather forcefully. At that point he “fired” me, stating I should seek another cardiologist. He was the only one within 50 miles.

I started looking for a GP that would work with me along with the information from Hans’ books. A friend of ours suggested that I go to her and her husband’s doctor. He was a physician from India who had helped her husband with his heart condition.

On October 5th 2007, I started with the new GP. I showed him my medical records and asked if he would allow me to try what I thought would work for me. He agreed, so we started by stopping the Sotalol over a period of a week.

I then asked about flecainide, he agreed and prescribed 50 mg 3 times a day (one every 8 hours) gradually upping the dose to 100 mg twice a day, as well as stopping the Toprol, and the one-a-day aspirin. He also gave me a prescription for metoprolol 25 mg to take at the start of an episode, sort of a modified “pill in the pocket” approach.

The first 15 days of October were rather bad with an event everyday lasting from one to 13 hours; however only 3 events the last half of October.

In November things began to improve with only three events and total afib time of 3 hours. The November 26th event was the first in 32 days!

On December 8th, 2007 I had a rather scary event. Things were working out so well that my wife and I went on a little vacation to a place where only 4x4 wheel vehicles could get to. We had to drive 12 miles on an ocean front beach, at low tide, no paved roads at all. At meal time I knew that another afib episode was in the offing (years of experience!)

I was on flecainide, so I took a metoprolol, crushed it and, being smarter than the average bear, used warm/hot water to down the crushed metoprolol, knowing that it would act much faster that way. It worked very fast indeed, so fast that I passed out! My wife caught me as I was falling off the chair. I recovered and went to a lounge chair and passed out again. Both times were less than a minute. What had happened was that my heart rate slowed down to the point that I blacked out. It was at night, with a high tide and my wife was rather upset (to say the least) as we were on our own and 12 miles from any help.

I insisted that we stay, and in the end things worked out well for us. Especially for me, as that, my friends, was the last event I have experienced in 31 months and counting!

I owe all this to Hans Larsen and the good folks on the forum. If you have read his books, and the forum, you will realize that what I did to eliminate my afib is nothing new.

Conclusions:

- Looking back over my records I find it quite obvious now that it was the Sotalol that caused and exacerbated my afib. I was, at the time, too close to the problem to recognize that fact, like “can’t see the trees for the forest”; the supplements were not strong enough to overcome the adverse effect of the Sotalol, which in itself is a strong beta-blocker.
- The ablations and supplements may have been helpful early on in reducing my events as I had only experienced one event in 2003 and 2004.
- I don’t drink or smoke; however, I absolutely need to avoid aspartame and MSG, and I have had episodes triggered by bending over, sleeping on my left side, and drinking cold liquids.
- Ninety per cent of my episodes were in the morning or after a meal, so I suspect my afib is vagal.
- Being “fired” by the cardiologist was, without a doubt, the best thing to happen to me.

- The best advice I can give is read, read and reread Hans Larsen's books and the forum, and as it is your body, let no one take away your choices. The knowledge gained from his books and the forum, will empower you to know what choices to make, and most importantly, what choices NOT to make.

NSR: Normal Sinus Rhythm; that is one nice rhythm, with a tempo and a beat, I can live with!

Am I there yet? Not sure, but I do know this, I am close enough to not worry about it.

This is what I am presently taking for afib prevention. The modifications to my present regimen of supplements are the results of new, updated, ongoing information from Hans' books and participants in the forum.

- Flecainide - 100 mg, twice a day
- Taurine - 1000 mg twice a day
- L-Arginine - 2000 mg once a day
- L-Carnitine - 500 mg, twice a day
- Vitamin C - 1000 mg, slow release, twice a day
- Fish oil, EPA - 310 mg, DHA -100 mg twice a day
- Nattokinase - 50 mg twice a day
- CO Q10 - 200 mg twice a day
- Niacin - 1000 mg, slow release, twice a day
- Klor-con - 10 mEq, (750 mg potassium) twice a day
- Magnesium - 200 mg (NO Aspartate) twice a day
- Vitamin D-3 - 5000 IU once a day
- Vitamin K2 - 100 mcg twice a day
- Vitamin E, Hi-Gamma - 400 mg once a day

My blood chemistry tests are all normal; blood pressure is 110/70.

On December 8th 2010 I will start reducing my flecainide to 50 mg in the AM and 50 mg in the PM, with the hope to cut it down to 25 mg AM & PM. Will see what happens.

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