

THE AFIB REPORT

Your Premier Information Resource for Lone Atrial Fibrillation!

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There is substantial evidence that elevated levels of the inflammation biomarker C-reactive protein (CRP) is associated with an increased risk of developing atrial fibrillation, an increased risk of paroxysmal AF progressing to permanent AF, and poorer outcome of electrical cardioversion and catheter ablation. Interestingly, similar associations are now coming to light in regard to brain natriuretic peptide (BNP). BNP, a cousin of atrial natriuretic peptide (ANP), is a hormone released from the walls of the ventricles when stretched. It is well established that a high BNP level is associated with heart failure, but it is now also clear that elevated BNP levels are closely associated with atrial fibrillation including lone AF. BNP levels are higher in afibbers than in non-afibbers and those in permanent afibbers are higher than those in paroxysmal afibbers. A high BNP level is associated with a lower probability that cardioversion will be successful and also predicts a poor outcome of catheter ablation. There is also evidence that an elevated BNP level in paroxysmal afibbers is associated with a quicker progression to the permanent state. Finally, some very recent research provides convincing evidence that an elevated BNP level is strongly associated with the risk of developing AF over a 10-year period following the baseline BNP determination. It is to be hoped that electrophysiologists will soon include a measurement of BNP or nt-pro-BNP in their initial evaluation of all afibbers and their relatives.

Also in this issue, we share the success story of a fellow afibber who has achieved freedom from afib through weekly acupuncture sessions – thanks for sharing Don! We report on a study comparing the efficacy and safety of antiarrhythmic therapy and catheter ablation, and present the first report of an association between dementia and AF in afibbers with underlying heart disease and other comorbid conditions.

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 lots of NSR,

Hans

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Association between dementia and AF

MURRAY, UTAH. The majority of patients with atrial fibrillation (AF) have underlying heart disease. Only about 20% have what is known as **lone** atrial fibrillation (LAF), that is, afib without underlying heart disease. The risk of afib increases with age, diabetes, hypertension, and systemic inflammation. These risk factors are identical to those observed for dementia. Alzheimer's disease (AD) is the most common form of dementia in the elderly (60-80% of

cases), followed by vascular dementia (10-20% of cases). Recent research has observed that AD tends to progress faster in patients with AF than in those free of afib. This observation is not really surprising since AD and AF share the same risk factors.

Researchers at the Intermountain Medical Center now report that AF is independently associated with AD. Their study involved 37,025 consecutive patients with heart disease who were examined by cardiologists and then enrolled in the Intermountain Heart Collaborative Study. Patients with existing AD or AF were excluded. During 5 years of follow-up, 10,161 (27%) developed AF and 1,535 (4.1%) were diagnosed with some form of dementia (23% Alzheimer's, 21% senile dementia, 12% vascular dementia, and 44% non-specified dementia). Patients with dementia were older and had higher rates of hypertension, coronary artery disease, renal failure, heart failure, and prior stroke – in other

words, a very sick group of people, and in no way comparable to a group of otherwise healthy lone afibbers.

About 50% of the patients who developed dementia also developed AF and in all cases the diagnosis of AF came before the diagnosis of dementia. Somewhat surprisingly, the association between AF and dementia was strongest in the age group 70 years or younger. The presence of AF also identified dementia patients who were at an increased risk of dying prematurely.

Bunch, TJ, et al. Atrial fibrillation is independently associated with senile, vascular, and Alzheimer's dementia. Heart Rhythm, Vol. 7, April 2010, pp. 433-37

Editor's comment: The conclusion that AF and dementia are associated is not really surprising since both share the same underlying causes – none of which apply to **LONE** atrial fibrillation.

Ablation versus antiarrhythmics

BORDEAUX, FRANCE. There is continuing controversy as to which is the safest and most effective way of preventing afib occurrence – antiarrhythmics (AADs) or catheter ablation. Professor Haissaguerre and his group at the Hopital Cardiologique Haut-Leveque provide evidence that catheter ablation results in superior outcomes when compared to the use of AADs. Among the highlights from their recent article in the *European Heart Journal* are:

- A re-analysis of AFFIRM trial data showed that maintenance of sinus rhythm with AADs is associated with a 47% increase in survival when compared with staying in afib. Unfortunately, the use of AADs is also associated with an increase in mortality of 49%. Conclusion – *“Although evidence (from the AFFIRM trial) suggested an advantage of sinus rhythm over AF, this beneficial effect seemed to be mitigated by the adverse effects of the drugs used to achieve and maintain it.”*
- Several studies have compared the efficacy of AADs to that of ablation. One study involving 763 patients concluded that AADs prevented afib recurrence in 32% of participants, while catheter ablation was successful in 79% of cases. In studies involving only patients with paroxysmal (intermittent) afib, ablation success rate was 81% as compared to 29% in the AAD group. In patients with persistent afib only, normal sinus rhythm was maintained in 75% (at 1 year) in the ablation group with 27% needing more than one procedure. In comparison, only 55% in the AAD group had a favourable outcome.
- *Current guidelines recommend that all patients undergoing catheter ablation for AF have at least electrical isolation of all four pulmonary veins. This is usually sufficient to restore durable sinus rhythm in patients with paroxysmal AF and short arrhythmia episodes, whereas patients with longstanding persistent AF or with permanent AF often need extensive ablation, including complete lines, to achieve a satisfactory outcome. Others should have an intermediate approach to target AF substrate in trying to avoid excessive ablation potentially leading to left atrial flutters or complications.*
- In the AFFIRM trial use of AADs was associated with a 49% increase in mortality. (NOTE: The AFFIRM trial involved patients with heart disease. There is no evidence that the 49% mortality rate applies to lone afibbers.) AADs are also associated with the possibility of significant side effects. The one-year

incidence of adverse events attributable to amiodarone was 6% for hypothyroidism, 1% for pulmonary toxicity, 0.9% for hyperthyroidism, 0.6% for liver toxicity, and 0.3% for peripheral neuropathy.

- The procedure-related mortality associated with catheter ablation is 0.1%. Overall complication rate (2005) is about 6% including a 1.2% risk of tamponade (piercing of the heart wall), a 1% risk of stroke or TIA (transient ischemic attack), 0.6% risk of developing symptomatic pulmonary vein stenosis, and a 0.01% risk of incurring an atrio-esophageal fistula.
- It is estimated that the cost of medical therapy over a 2 to 5 year period equals that of a catheter ablation.

The authors conclude that, *“It should, therefore, be emphasized that there is consensus in the current practice guidelines to consider catheter ablation as a second line treatment for AF, after failure of medical therapy, and to reserve it for patients who are symptomatic. The future may hold a greater role for ablation, as we achieve better understanding of AF physiopathology, improve tools allowing faster, more efficient, and safer procedures, and as ongoing studies are conducted to assess whether there is a survival advantage with the ablative treatment of AF.”*

Nault, I, et al. Drugs vs. ablation for the treatment of atrial fibrillation: the evidence supporting catheter ablation. European Heart Journal, March 23, 2010 [Epub ahead of print]

Editors’ comment: The authors point out that most data on catheter ablation of AF in the literature stem from a few high-volume centers which are over-presented and may not reflect results obtained in smaller centers. This is indeed the case as confirmed in our ablation/maze surveys. The 2008 survey of 950 procedure outcomes found the following final complete success rates (no afib, no AADs) for 600 patients:

	<u>Complete Success</u>	<u>Repeat Rate</u>
Top-ranked institutions	65%	30%
Other institutions	32%	44%

Thus, it is likely that undergoing catheter ablation at a less than top-ranked institution will be no more effective than continuing on AADs.

Elevated CRP associated with cardioversion failure

BRESCIA, ITALY. C-reactive protein (CRP) is an important indicator of systemic inflammation and also predicts the risk of developing cardiovascular disease. It is measured in blood serum and the usual reference range is 0 to 5.0 mg/L or 0 to 0.5 mg/dL. There is evidence that the higher the CRP value the greater the risk of developing cardiovascular disease. Several studies have also uncovered associations between elevated CRP and the risk of developing atrial fibrillation (AF) as well as the degree of persistence of the AF (paroxysmal, persistent, permanent), recurrence after cardioversion, and left atrial enlargement.

A group of Greek researchers reported in 2008 that patients who were cardioverted and then maintained on amiodarone were more likely to still be in sinus rhythm 3 years after the cardioversion if their CRP level prior to cardioversion was below 0.43 mg/dL (4.3 mg/L) than if it was above this level.

Researchers at the University of Brescia now confirm that pre-cardioversion CRP level is indeed an important predictor of the likelihood of remaining afib-free after an electrical cardioversion. Their study involved 106 patients (74 men and 32 women) with new-onset, persistent lone AF who underwent cardioversion with a biphasic defibrillator using 150 to 200 J according to the weight of the patient. All study participants had an ECG one week following the procedure and a Holter monitor evaluation 1 and 6 months following cardioversion. All patients left the hospital in normal sinus rhythm. At the 1-week examination, 20% had reverted to AF and this percentage rose to 43% at the 6-month examination.

The researchers observed a strong correlation between elevated CRP (high sensitivity C-reactive protein) and the risk of afib recurrence. The average CRP level among afibbers experiencing recurrence was 5.8 mg/L (0.58 mg/dL), while it was only 0.9 mg/L (0.09 mg/dL) among the 60 patients who did not experience recurrence.

NOTE: Ignoring CRP levels above 10 mg/L (an indicator of acute inflammation) did not change these numbers significantly. Among study participants who reverted to AF within the first week, 86% had an elevated CRP level; the corresponding number for patients reverting by 6 months was 92%. There were no statistically significant differences between patients who remained in sinus rhythm and those who did not as far as the following variables are concerned:

Age	Left ventricular ejection fraction
Presence of diabetes	Fibrinogen level
Presence of hypertension	Left atrial diameter
Duration of AF	White blood cell count

The Italian researchers point out that ACE inhibitors and statin drugs have been found to have anti-inflammatory properties, that fish oils reduce risk of post-operative AF, and that methylprednisolone reduces the risk of post-cardioversion AF recurrence by decreasing CRP levels. They conclude that pre-cardioversion CRP levels predict the risk of relapse and that patients with high levels may benefit from therapy with antiarrhythmics prior to and after cardioversion.

Korantzopoulos, P, et al. Long-term prognostic value of baseline C-reactive protein in predicting recurrence of atrial fibrillation after electrical cardioversion. PACE, Vol. 31, October 2008, pp. 1272-76

Vizzardi, E, et al. High sensitivity C-reactive protein: a predictor for recurrence of atrial fibrillation after successful cardioversion. Internal and Emergency Medicine, Vol. 4, 2009, pp. 309-13

Editor's comment: Persistent afibbers awaiting cardioversion should have an hs-CRP test and if their level is elevated should consider supplementing with a natural anti-inflammatory such as *Zyflamend*, beta-sitosterol, fish oil, bromelain, curcumin, boswellia, *Moducare* or quercetin.

Poorer ablation outcome associated with elevated CRP

TAIPEI, TAIWAN. An elevated blood serum level of C-reactive protein (CRP) is an indicator of systemic inflammation and is associated with an increased risk of cardiovascular disease and atrial fibrillation. There is also evidence that an elevated CRP level is associated with a greater risk of afib recurrence after electrical cardioversion. Now Dr. Shih-Ann Chen and colleagues at the Taipei Veterans General Hospital report that an elevated CRP level prior to catheter ablation for AF is associated with a greater risk of failure.

Their study involved 107 patients with paroxysmal afib and 30 patients with persistent or permanent (non-paroxysmal) afib. The majority of the group (69%) had lone atrial fibrillation (LAF) and the average age of the patients was 54 years. All study participants underwent a circumferential pulmonary vein isolation (PVI) procedure with additional linear lesions as required using a NavX system for guidance. After the procedure all patients were prescribed amiodarone for 8 weeks and underwent examination every 1 to 3 months thereafter. After a median follow-up of 15 months, 91% of patients were in sinus rhythm following one or more procedures.

The researchers divided the patients into two groups depending on their pre-ablation CRP level. Group 1 (low CRP) involved 105 patients with a median CRP of 0.8 mg/L, while group 2 consisted of the remaining 32 patients with a median CRP of 5.6 mg/L. They found that the success rate for the initial procedure was 72% in group 1 and 50% in group 2. Corresponding numbers for final success rates were 94% versus 81%. Repeat rates in the two groups were 19% and 56% respectively. The number of ectopic-producing sites located outside the pulmonary veins were significantly higher in group 2 than in group 1 (34% vs 17%) supporting the notion that inflammation involving the atrial wall plays a significant role in AF – particularly in that of persistent and permanent AF.

There was a trend for the prevalence of hypertension and heart disease to be higher in group 2. The researchers also noted that patients with a high CRP level had higher glucose and glycated hemoglobin levels compared to those with lower CRP levels. They conclude that pre-procedure CRP level is an important predictor of the long-term success of catheter ablation and suggest that a level above 2.92 mg/L is associated with a significantly increased risk of failure.

Lin, YJ, et al. Prognostic implications of the high-sensitive C-reactive protein in the catheter ablation of atrial fibrillation. *American Journal of Cardiology*, Vol. 105, No. 4, February 15, 2010, pp. 495-501

Editor's comment: This study adds to the evidence that inflammation is involved in atrial fibrillation, particularly in the case of persistent and permanent afib. It also emphasizes the importance of having an hs-CRP test to determine if systemic inflammation is present and, if necessary, to deal with it prior to catheter ablation.

RESEARCH REPORT

The Role of BNP in Atrial Fibrillation

Brain natriuretic peptide (BNP), a cousin of atrial natriuretic peptide (ANP), is a hormone released from the walls of the ventricles when stretched such as during unusually strenuous activity. It is stored as a prohormone within secretory granules in the ventricles and is secreted as an N-terminal fragment, N-terminal pro-brain natriuretic peptide (nt-pro-BNP), and the smaller active hormone BNP. BNP has effects similar to those of ANP, that is, it decreases sodium reabsorption rate, renin release, and aldosterone release; it also increases vagal (parasympathetic) tone and decreases adrenergic (sympathetic) tone. Because nt-pro-BNP is easier to measure than BNP it is often used as a marker for BNP.

It is well established that BNP and nt-pro-BNP levels are elevated in heart failure and that the degree of elevation is directly proportional to the seriousness of the failure. However, researchers at the Massachusetts General Hospital have reported that lone afibbers also have elevated nt-pro-BNP values even when in sinus rhythm. Their study involved 150 participants with lone atrial fibrillation (LAF) and 75 afib-free controls matched according to age, gender, race, and ethnicity. The majority of participants (81%) were men, the average age at enrolment was 54 years, and the average age at first diagnosis was 45 years. The demographics of the study group thus closely mirrors that of the much larger groups involved in our own LAF surveys and, once again, puts "paid" to the still widely held notion that afib is solely a disease of old age, which it clearly is not. At the time of enrolment 130 afibbers had the paroxysmal variety, while 20 were in permanent AF.

Blood samples were obtained from all participants at enrolment. The researchers found that the median level of nt-pro-BNP was significantly higher among lone afibbers (even when in sinus rhythm) than among controls (166 versus 133 fmol/mL or 48 pg/mL versus 39 pg/mL); they also observed that nt-pro-BNP levels were higher in afibbers with permanent LAF than in those with paroxysmal LAF (55 pg/mL versus 45 pg/mL), and that afibbers with high nt-pro-BNP levels at study entry were more likely to progress to the permanent version than were those with lower levels (57 pg/mL versus 47 pg/mL). There were no significant differences in ANP levels between afibbers and healthy controls, but ANP levels in afibbers who later developed hypertension were significantly higher than in those who did not (1090 versus 470 pg/mL). The researchers speculate that BNP may be involved in sustaining fibrillatory rotors through its potentiating effect on vagal nerve impulses transmitted from the brain.[1]

BNP and Cardioversion

Polish researchers investigated a group of afibbers with hypertension or coronary heart disease and found that BNP levels rise during an afib episode and tend to return to normal following a successful cardioversion. The decline in BNP level was quite significant with a drop from 95 to 28 pg/mL in paroxysmal afibbers and a drop from 75 to 41 pg/mL in persistent afibbers.[2]

In January 2010 Dr. Qi-xian Zeng and colleagues at the Shandong Communication Hospital in Jinan, China confirmed that patients with atrial fibrillation have elevated levels of both BNP and ANP when compared to healthy controls and that these levels decrease significantly after a successful cardioversion. The study included 100 consecutive patients with paroxysmal or persistent AF and 20 healthy controls. About half the patients had coronary heart disease or hypertension, but none had heart failure. Prior to their scheduled cardioversion (chemical using amiodarone or propranolol) all patients had their blood levels of BNP and ANP measured. The

cardioversion was initially successful in 60 patients, but 18 experienced recurrence within 24 hours and were, together with the 40 patients not successfully cardioverted, classified as permanent afibbers.

Thus, 24 hours following the cardioversion 42 patients (42%) were in normal sinus rhythm (NSR), while 58 were still in afib. Both BNP and ANP levels decreased significantly immediately following the cardioversion with BNP levels dropping from an average of 162 pg/mL to 124 pg/mL and ANP levels declining from 200 pg/mL to 164 pg/mL. Both BNP and ANP levels were significantly higher in the 16 patients who relapsed into AF within 24 hours of being cardioverted than among those who remained in NSR (BNP of 180 versus 132 pg/mL and ANP of 188 versus 138 pg/mL).

The 42 patients still in NSR after 24 hours were followed for an additional 500 days. At the end of this period, 26 were still in NSR corresponding to an overall 500-day success rate of 26% for the 100 patients originally undergoing cardioversion. The average baseline BNP value for those who remained in NSR for 500 days was 122 pg/mL as compared to 147 pg/mL for the patients who relapsed during the 500 days. Corresponding numbers for ANP were 129 and 153 pg/mL. In comparison, BNP and ANP values for healthy controls were 81 and 100 pg/mL respectively.

The Chinese researchers conclude that baseline BNP and ANP levels can be used to predict the likely outcome of cardioversion and that afibbers with a BNP level of less than 138 pg/mL have a good chance of being successfully converted.[3]

In contrast to the findings of the Chinese researchers, Polish researchers recently reported that, while baseline ANP levels are substantially higher among persistent afibbers than among healthy controls, there was no correlation between the maintenance of sinus rhythm during 30 days after electrical cardioversion and baseline ANP level. They did confirm that ANP levels decreased significantly after a successful cardioversion.[4]

Thus, it would appear that, while a low baseline BNP is likely associated with better cardioversion outcome, a similar correlation with ANP is in doubt.

BNP and Catheter Ablation

Japanese researchers conducted a study involving 66 (54 men) paroxysmal afibbers with no underlying heart disease (lone afibbers). The average age of the study participants was 61 years (range of 51-71 years); they had suffered from afib for 1-7 years, had failed 2-4 class I or class II antiarrhythmic drugs, and experienced episodes that self-converted in less than 24 hours. Their average left atrial diameter was 35 mm (range of 25-45 mm).

The participants all underwent a segmental, ostial PVI targeting all 4 pulmonary veins and were followed up for 3 months after their last ablation. The follow-up included monthly 24-hour Holter recordings and ANP and BNP determination at baseline and 3 months. Three months after the initial PVI, only 53% of the study participants were still in normal sinus rhythm without the use of antiarrhythmic drugs. Nine (14%) of the unsuccessfully ablated patients underwent second and third procedures. Five became afib-free after the second procedure, and two achieved continuous normal sinus rhythm (NSR) after the third procedure.

The Japanese researchers made the following observations:

- At baseline, both ANP and BNP levels were elevated in 14 patients (21%) and in the remaining 52 patients (79%) only BNP level was elevated.
- There were no significant correlations between episode frequency and duration and ANP/BNP levels or left ventricular (LV) ejection fraction.
- There was a significant, but weak correlation between ANP and BNP levels and afib burden (episode frequency x duration) prior to the PVI.

- BNP level was positively correlated with left atrial dimension.
- Patients with elevated ANP levels tended to experience more episodes and a higher afib burden than those with normal levels.
- Both ANP and BNP levels decreased significantly after the first PVI whether ultimately successful or not (ANP from an average of 69 to 25 pg/mL and BNP from 58 to 23 pg/mL).
- In patients with elevated ANP only (at baseline) the ANP concentration returned to normal after the initial PVI.
- Average BNP levels decreased from 55.7 to 12.3 pg/mL in the 35 patients whose first PVI was successful.
- An enlarged left atrium at baseline was associated with a greater chance of the PVI being unsuccessful.
- No association was observed between ANP/BNP level at baseline and the outcome of the PVI.
- The decrease in afib burden post-PVI was proportional to the decrease in BNP, which eventually returned to normal level after a successful PVI.

The researchers conclude that ANP/BNP levels are elevated in paroxysmal afibbers even if they don't have structural heart disease. Both ANP and BNP levels decrease significantly after a PVI and a return to normal of BNP post-ablation is a good indication that the PVI was successful.[5]

The finding that a return to normal of BNP post-ablation is a good indication of the short-term success of a PVI was recently confirmed by a group of German researchers. Their study involved 68 patients (78% men) with symptomatic lone AF – 48 with paroxysmal AF and 20 with persistent AF. BNP values were measured one day before a scheduled PVI procedure (anatomical [CARTO] protocol) and again 3 months following the ablation. At the 3-month follow-up 7-day Holter monitor recordings were also obtained.

Baseline BNP values were significantly higher in patients with persistent AF than in those with paroxysmal (146 pg/mL versus 84 pg/mL). Three months after the PVI 79% of paroxysmal afibbers and 55% of persistent afibbers were still in NSR. Patients whose PVI had been successful had a significantly lower BNP at baseline than did those with a high BNP. For paroxysmal afibbers baseline BNP values associated with successful and unsuccessful PVIs were 69 pg/mL and 144 pg/mL respectively. Corresponding numbers for persistent afibbers were 106 pg/mL and 193 pg/mL. The German researchers conclude that a BNP measurement may be helpful in selecting patients most likely to benefit from a PVI procedure.[6]

BNP and Risk of AF

In November 2009 researchers at the University of Washington reported that BNP is the strongest known predictor of the risk of developing atrial fibrillation. Their study included 5445 participants in the Cardiovascular Health Study who were enrolled between 1990 and 1993 and, at that time, underwent a thorough clinical evaluation. The baseline examination included a standardized questionnaire assessing a variety of risk factors, including smoking, alcohol intake, history of diabetes mellitus, stroke, coronary heart disease, heart failure, self-reported health status, medication use, and history of prior cardiovascular disease.

The physical examination included measurements of height, weight, and blood pressure as well as a resting ECG and echocardiogram. Numerous blood tests were also performed including determination of C-reactive protein, cholesterol, fasting glucose and BNP. Participants were contacted every 6 months for follow-up over the next 10 years.

At baseline, 148 participants were found to have AF and another 1126 developed AF over the next 10 years giving a total prevalence of AF of 25% at the 10-year mark. The following variables, as expected, were predictive of future AF development:

Advanced age	History of heart failure
Male gender	Hypertension
Black race	Elevated total cholesterol
Elevated body mass index	Elevated C-reactive protein
Tallness	Elevated creatinine
Diabetes mellitus	Elevated glucose
History of coronary heart disease	Enlarged left atrium

In addition, baseline nt-pro-BNP was strongly correlated with both prevalence of AF at baseline and the development of AF during follow-up. Study participants whose baseline BNP level was greater than 290 pg/mL (5th quintile) had an AF prevalence of 11.75% at baseline as compared to those with a baseline BNP of less than 50 pg/mL (1st quintile) among whom the prevalence was only 0.1%, or a 128:1 prevalence ratio. After adjusting for possible confounding variables, the prevalence ratio rose to 147:1. The strong correlation between BNP and AF was also noted for participants who developed afib during the 10-year follow-up. Here the AF incidence associated with the lowest quintile of baseline BNP was 1.2% as compared to 5.1% in the 5th quintile. After adjusting for possible confounders, the researchers conclude that high BNP levels are associated with a 4-fold increase in the risk of developing AF during the 10-year following initial determination of BNP.[7]

As part of Boston University's Framingham Study, Emelia Benjamin and colleagues just recently confirmed that BNP level predicts the development of AF. Their study included 3120 afib-free participants (average age of 58 years, 54% women) who had an extensive clinical evaluation in 1995-1998 and were followed for an average (median) of 10 years. Blood samples were taken at baseline to measure the level of 10 biomarkers that might be important in predicting the later development of AF. The 10 biomarkers were:

C-reactive protein	Aldosterone
Fibrinogen	Homocysteine
BNP	D-dimer
N-ANP	Plasminogen activator inhibitor type 1
Renin	Urinary albumin-to-creatinine ratio

At the end of the 10-year follow-up, 209 study participants (6.7%) had been diagnosed with AF. In addition to confirming the conventional risk factors for AF (advanced age, male sex, hypertension, elevated body mass index, and cardiovascular disease) the Framingham group also noted that participants who developed AF had significantly higher baseline blood levels of C-reactive protein, BNP and ANP. There was also a trend for low renin levels to be associated with an increased risk of AF ($p=0.08$). Upon adjusting for possible confounding variables the researchers concluded that an elevated BNP level is a powerful predictor of future AF and significantly improves risk prediction beyond a risk score based on hitherto known clinical risk factors.[8]

Conclusion

Brain natriuretic peptide (BNP) is an important hormone released from the walls of the ventricles and, to some extent, the atria when stretched. It is well established that a high BNP level is associated with heart failure, but it is now also clear that elevated BNP levels are closely associated with atrial fibrillation including lone AF. BNP levels are higher in afibbers than in non-afibbers and those in permanent afibbers are higher than those in paroxysmal afibbers. A high BNP level is associated with a lower probability that cardioversion will be successful and also predicts a poor outcome of catheter ablation. There is also evidence that an elevated BNP level in paroxysmal afibbers is associated with a quicker progression to the permanent state. Finally, some very recent research provides convincing evidence that an elevated BNP level is strongly associated with the risk of developing AF over a 10-year period following the baseline BNP determination. It is to be hoped that electrophysiologists will soon include a measurement of BNP or nt-pro-BNP in their initial evaluation of all afibbers and their relatives.

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An Afib Success Story – Acupuncture

by Don Girskis
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I'm 50 years old, and have had lone a-fib of a vagal nature on and off for the past 5 years. I've had heart examinations of every type and doctors believe my heart is very healthy. I exercise 5 times weekly and eat well. On September 11, 2009, I was in a mountain bike accident and broke my arm (ulna and radius), and also suffered a hard blow to the head (thank goodness my helmet was on, it was destroyed). Prior to the bike accident, I had but one a-fib episode in the prior 2 years. After the bike accident, I experienced an a-fib episode lasting from 4 to 30 hours every other day for 4 months.

During those 4 months of a-fib, I sought a number of different treatments. I went to two different chiropractors for multiple treatments with each believing that some structural tweak must be contributing to the problem. They were of no help. I tried self-medicating through a combination of magnesium, potassium, calcium, fish oil, vitamins C & D, but to no avail. I sought the help of a nutritionist who had me on a slew of supplements, including magnesium, potassium and calcium, and then I started experiencing a-fib daily. After two weeks of daily episodes, I ceased taking the supplements and I went back into the every-other-day a-fib routine, which was somewhat of a relief.

I sought the advice of an electrophysiologist who did not believe there was any correlation between my bike accident and the a-fib; he said it was just coincidence. He prescribed flecainide and metoprolol as the first step, and recommended ablation as the next option. Upon being told that the side effects of these drugs could include "male" problems and depression, I decided to hold off taking the drugs, and to forego an ablation given the risks involved with the procedure.

My GP recommended an acupuncturist, who is a MD and an acupuncturist from Taiwan and trained in both western and eastern methods. I've been having an acupuncture treatment every 2 - 3 weeks now for the last 3 months, and I have been completely **a-fib free**. He also recommended I eliminate sweets, red meat and fried foods from my diet, and he placed tiny magnets with tape in my ears and on my lower back. I had IMMEDIATE improvement after seeing him the first time. I do believe he's made the difference. He told me of another patient of his that he treated who had a-fib for 10 years and now have been a-fib free for the last 2 years.

I really wanted my success story to be shared with others in the hope they too can become a-fib free! I have not changed my lifestyle one bit. I still drink coffee, beer, and have an incredibly stressful job that includes weekly travel somewhere in the world. But I am also passionate about exercise, eat healthy, and live life to it's fullest.

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