THE AFIB REPORT

Your Premier Information Resource for Lone Atrial Fibrillation!

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It always intrigues me to learn about the experiences of other afibbers and never ceases to amaze me how one cold drink, one cup of coffee too many, or a highly stressful event can initiate that first episode which usually develops into a lifelong struggle with "the beast". My own initiating episode was caused by a lot of stress at work combined with a viral infection. It took me 15 years before I finally banished the beast for good through the magical hands of Prof. Haissaguerre and Dr. Jais in Bordeaux. In this issue, Anthony Bestwick, a 12-year veteran of the afib battle wonderfully describes his journey, which ended up with a successful and very inexpensive ablation in India.

The "competition" between segmental PVI (Haissaguerre and Natale methods) and circumferential anatomical PVI (Pappone method) is heating up with the integration of CT scans and MRIs into the CARTO mapping system used in the electroanatomical approach. So far, the results of these technological "triumphs" have not translated into a better outcome for the patient. The segmental and antrum isolation procedures as developed and still used by Prof. Haissaguerre, Dr. Natale, and many other skilled EPs would still appear to be the "gold standard". For difficult cases involving diseased atrial tissue, the substrate ablation technique developed by Dr. Koonlawee Nademanee would appear to hold considerable promise. Recent statistics indicate a complete success rate of 75% for this procedure compared with 63% for the standard PVIs.

Also in this issue we report on the new guidelines for stroke prevention, that Lipitor (atorvastatin) may help prevent recurrence of afib after electrocardioversion, and much more.

Just a reminder – there have been some changes to our on-line vitamin store. iHerb, our supplier, has moved to new expanded quarters and set up a new division, www.papanature.com which will handle its on-line sales. Coinciding with the move iHerb has changed their discount structure and instituted new (very low) shipping charges. I believe papanature.com now offers the best prices, freshest products, and best delivery service on the Internet and hope that you will continue to patronize the affibers.org vitamin store. Please keep in mind that when you order through my store I will receive a commission, which materially helps to defray the cost of operating the web site and bulletin board.

Your continuing support is very much appreciated,
Hans

Highlights

Statin drug helps prevent recurrence of AF

ISPARTA, TURKEY. Several studies have shown that statin drugs are helpful in reducing cholesterol levels and also exhibit a significant anti-inflammatory effect. Turkish researchers now report that atorvastatin (Lipitor) helps prevent the recurrence of afib after electro-cardioversion in patients with persistent AF. Their clinical trial involved 19 women and 29 men (average age of 62

years) who were scheduled for cardioversion after having been in afib for more than 48 hours. The patients were all free of coronary artery disease, but about 40% had high blood pressure and 23% had diabetes.

They were randomized to a control group or to receive 10 mg/day of atorvastatin 2 days prior to the electro-cardioversion and for the following 3 months. Six patients (25%) in the statin group and 2 patients (8.3%) in the control group converted spontaneously prior to the procedure. The remaining patients underwent successful cardioversion. During a 3-month follow-up, 3 patients (12.5%) in the atorvastatin group experienced a recurrence as compared to 11 patients (45.8%) in the control group. It is of interest that all the recurrences occurred among participants who had been electro-cardioverted; there were no recurrences among the patients who had converted on their own prior to the procedure.

The researchers conclude that the patients on atorvastatin had an 81% (RR=0.19) lower risk of recurrence than did the control group after adjusting for body mass index, episode duration, left atrial diameter, and the presence of diabetes. The researchers caution that their study was small, was not placebo-controlled, and was not double-blind. They conclude, "Because our data were limited, the results of future large studies should be awaited before treating AF with statins."

Ozaydin, M, et al. Effect of atorvastatin on the recurrence rates of atrial fibrillation after electrical cardioversion. **American Journal of Cardiology**, *Vol. 97, May 15, 2006, pp. 1490-93*

Editor's comment: Although there is considerable controversy at the moment as to whether inflammation is a cause of afib or whether afib causes inflammation, it is possible that inflammation may indeed be a causative factor in persistent and permanent AF, but not in paroxysmal (intermittent) AF. Thus, statin drugs may indeed turn out to be helpful for persistent and permanent afibbers. They do, of course, have several undesirable side effects, but these can be minimized by adequate supplementation with coenzyme Q10 and would, in any case, be likely to be less severe than the possible side effects of most antiarrhythmic drugs.

Lone atrial fibrillation and C-reactive protein

BOSTON, MASSACHUSETTS. There is considerable evidence of an association between inflammation and atrial fibrillation. Biopsies have found inflammatory infiltrates in patients with AF and several studies have found that AF patients tend to have higher blood levels of inflammatory markers such as C-reactive protein (CRP), prothrombin fragments and interleukin-6. Unfortunately, most studies involving atrial fibrillation do not distinguish between AF with and without underlying cardiovascular disease, so it is not at all clear whether the inflammation connection applies to lone atrial fibrillation, that is, AF without underlying heart disease.

A group of researchers at the Massachusetts General Hospital recently released the results of a study designed to determine if systemic inflammation (as measured by CRP level) is associated with AF *per se*, or rather with an underlying cardiovascular disease. The study involved 121 lone afibbers (no history of coronary artery disease, rheumatic heart disease, cardiomyopathy, significant valvular disease, hyperthyroidism, or hypertension), 52 patients with none of the above conditions except hypertension, and 75 healthy controls without heart disease, hypertension and AF. The mean age of the lone afibbers at enrolment was 54.3 years and the mean age at diagnosis was 44.8 years. The mean age of the AF + hypertension participants at enrolment was 60.2 years and the mean age at diagnosis was 50.6 years. Most study participants (83%) were men, and most lone afibbers (91.7%) and AF + hypertension patients (84.6%) had paroxysmal afib. Just over 56% of the lone afibbers had experienced more than 100 episodes. It is interesting that 34% of the lone afibbers and 37% of the AF + hypertension patients had a first-degree relative with AF.

All study participants underwent a detailed medical examination and had an electrocardiogram and an echocardiogram at enrolment. They also provided a blood sample for CRP analysis. The researchers observed no statistically significant difference in CRP levels between lone afibbers and controls (1.34 vs 1.21 mg/L); however, they did note a significant difference between AF + hypertension patients and controls (1.90 vs 1.21 mg/L), but suggest that this is primarily due to a greater proportion of overweight and obese individuals in

the hypertensive group. They found no difference in CRP levels between the 20% of afibbers taking statin drugs and those not taking them. They also found no significant difference in CRP level among lone afibbers who were in sinus rhythm at time of blood sampling versus those in afib (1.37 vs 1.38 mg/L).

Finally, they observed no significant difference in CRP values between paroxysmal and permanent afibbers. They did, however, observe a strong correlation between a high body mass index and an elevated CRP level. The researchers conclude that atrial fibrillation on its own (without underlying heart disease, hypertension or obesity) is not associated with evidence of systemic inflammation.

Ellinor, PT, et al. C-reactive protein in lone atrial fibrillation. **American Journal of Cardiology**, *Vol. 97, May 1, 2006, pp. 1346-50*

Editor's comment: This study confirms my own intuitive feeling that systemic inflammation (high CRP levels) may not be as important in true lone atrial fibrillation as previously thought. It also strongly underlines the importance of not automatically assuming that data obtained from studies of AF patients in general are necessarily applicable to lone afibbers. The study is also of considerable interest in that it confirms many of the values obtained in our early LAF surveys. For example, the percentage of women in the sample of lone afibbers was 17% vs 21% in our database of 625 lone afibbers. The average age at diagnosis was 45 years vs 47 years in our database; the average blood pressure was 122/75 vs 124/76 in our LAF Survey V. This is a comforting confirmation that our surveys do indeed reflect the general population of lone afibbers.

New guidelines for stroke prevention

DALLAS, TEXAS. New guidelines for the prevention of ischemic stroke (stroke caused by a blood clot) have been issued by the American Heart Association and the American Stroke Association. It is estimated that more than 700,000 strokes occur each year in the United States alone resulting in over 160,000 deaths. Over 70% of the strokes are first events making primary prevention particularly important. The guidelines list the following well-documented risk factors for ischemic stroke:

- Advanced age
- Black race
- Male gender
- Family history of stroke or TIA (transient ischemic attack)
- Low birth weight
- Cardiovascular disease
- Hypertension
- Cigarette smoking
- Diabetes
- Non-valvular atrial fibrillation
- Asymptomatic carotid stenosis
- Sickle cell disease
- High total cholesterol level
- Low HDL cholesterol
- A sodium intake above 2300 mg/day
- A potassium intake below 4700 mg/day
- Obesity (BMI above 30)
- Physical inactivity
- Postmenopausal hormone therapy

Other less well-documented risk factors include metabolic syndrome, alcohol abuse, sleep apnea, elevated homocysteine level, and for women at least, a high level of C-reactive protein. As far as atrial fibrillation is concerned, the guidelines contain the following statements of particular interest:

- "*The absolute risk of stroke varies 20-fold among atrial fibrillation patients, according to age and associated vascular diseases*."

- "*Most patients with atrial fibrillation who are under the age of 75 years without prior stroke or TIA have a relatively low risk of stroke (1% to 2% a year) if given aspirin, and they do not benefit sufficiently from anticoagulation (with warfarin) to warrant its use for primary stroke prevention."*

The guidelines also recommend that AF patients with a $CHAD_2$ score of 0 (no congestive heart failure, no hypertension, no diabetes, no prior stroke or TIA, and under the age of 75 years) should be treated with aspirin (75-325 mg/day) and do not benefit from anticoagulation. The recommendation regarding the prophylactic (preventive) use of aspirin by afibbers is actually, at least as far as men is concerned, in contradiction to the main recommendation of the guidelines:

"*Aspirin is not recommended for the prevention of a first stroke in men. The use of aspirin is recommended for cardiovascular (including but not specific to stroke) prophylaxis among persons whose risk is sufficiently high for the benefits to outweigh the risks associated with treatment. Aspirin can be useful for prevention of a first stroke among women whose risk is sufficiently high for the benefits to outweigh the risks associated with treatment*."

The guidelines also confirm that an increased intake of fruit and vegetables is associated with a reduction in stroke risk, that a high intake of sodium (above 2.3 g/day or 100 mmol/day) increases risk, and that a high intake of potassium (over 4700 mg/day or 120 mmol/day) reduces risk. Regular physical exercise and maintaining the ideal body weight have also been found to be protective. [572 references]

Goldstein, LB, et al. Primary prevention of ischemic stroke. A guideline from the American Heart Association/American Stroke Association Stroke Council. **Stroke**, *Vol. 37, June 2006*

Editor's comment: The new guidelines confirm my position that lone afibbers with no additional risk factors for stroke should not be on long-term warfarin therapy. The reason is simple – for this category of afibbers the danger of suffering a serious hemorrhagic stroke when on warfarin is greater than the danger of suffering an ischemic stroke when not on warfarin.

Latest ablation statistics

NEW YORK, NY. Researchers at the Montefiore Medical Center and the Albert Einstein College of Medicine have performed a thorough review of the latest literature dealing with ablation for atrial fibrillation. They reviewed over 200 articles dealing with procedure outcome and compiled data for over 23,000 AF patients who had undergone radiofrequency or surgical ablation for AF (lone or otherwise). The average full success or "cure" rate (no afib, no antiarrhythmics 6 months after ablation) for all patients was 63% with the full + partial success rate (less afib or no afib with medications) being 75%. The success rate was slightly better for the pulmonary vein antrum isolation (Natale) procedure at 67% cure and 76% cure or partial success. The fairly new approach substrate ablation (ablation of spots showing complex fractionated atrial electrograms) was quite successful with a cure rate of 75% and a cure + partial success rate of 87%. Surgical procedures such as the mini-maze had a cure rate of 67% and a full + partial success rate of 79%.

The average procedure time was about 4 hours and 25% of all procedures had to be repeated. PV stenosis occurred in 1.5% of procedures; however, only a very small number of the papers reviewed actually gave a number for the incidence of stenosis. Overall, 5.2% of patients experienced one or more complications. The researchers point out that substrate ablation may well be the preferred procedure for patients with a high degree of abnormal atrial tissue such as is commonly found among persistent and permanent afibbers.

Fisher, JD, et al. Atrial fibrillation ablation: reaching the mainstream. **PACE**, *Vol. 29, May 2006, pp. 523-37*

Editor's comment: The results reported in this survey were reported in scientific papers by the institutions actually performing the ablations. Thus, it is likely that they reflect the performance at larger centers since individual EPs or EPs at small centers are perhaps less likely to report their experiences. The overall full success (cure) rate reported here of 63% and the full + partial success rate of 75% is actually very close to the average rates reported for the top 9 institutions in our LAF-9 Survey. These rates were 64% and 79% respectively. The repeat rate of 25% is also very close to the rate of 21% found in our survey.

Exploration of left atrial flutter

GENEVA, SWITZERLAND. The development of left atrial flutter after an otherwise successful radiofrequency (RF) ablation is a fairly common occurrence. In some cases the flutter resolves on its own within 3 months or so, but in other cases another ablation is necessary to cure it. Researchers at the Hopital Cantonal de Geneve now report that the majority of these flutters can be easily located and eliminated with one well-placed,

30-second “burn” (application of radiofrequency energy).

Their study involved 207 afibbers who had undergone a successful RF ablation to eliminate their AF (151 paroxysmal and 56 persistent). Sixteen (8%) of the patients developed left atrial flutter after the procedure. One case resolved spontaneously, but the other 15 required an additional ablation to correct the problem. The patients were all men with an average age of 56 years; 9 had paroxysmal afib and 6 had persistent afib prior to their ablation; 4 had underlying structural heart disease. A careful ECG study combined with the location of fractionated electrograms showed that 11 of the 15 atrial flutters originated in discrete, narrow, and unique zones of marked slow conduction at or in the vicinity of previously ablated PV ostial sites. The offending zones were ablated and the left atrial flutter eliminated within 30 seconds with a single RF application. The Swiss researchers conclude that most left atrial flutter sources are located within a very small area and can be eliminated quite easily. They provide detailed instructions as how to locate the offending areas.

Shah, D, et al. Narrow, slow-conducting isthmus dependent left atrial reentry developing after ablation for atrial fibrillation: ECG characterization and elimination by focal RF ablation. **Journal of Cardiovascular Electrophysiology**, *Vol. 17, May 2006, pp. 508-15*

Merino, JL. Slow conduction and flutter following atrial fibrillation ablation: proarrhythmia or unmasking effect of radiofrequency application? **Journal of Cardiovascular Electrophysiology**, *Vol. 17, May 2006, pp. 516-19*

RF ablation – One method does not fit all

TREVISO, ITALY. There are currently four common protocols for the performance of a radiofrequency ablation:

- **Segmental pulmonary vein isolation (SPVI or Haissaguerre procedure) –** In this procedure electrophysiological mapping (using a multipolar Lasso catheter) is used to locate the pathways taken by aberrant impulses from the pulmonary veins and these pathways are then eliminated by ablation around the veins approximately 5 to 10 mm from the ostium of the veins.

- **Circumferential anatomical pulmonary vein isolation (CAPVI or Pappone procedure) –** In this procedure anatomical mapping (CARTO) is used to establish the exact location of the pulmonary veins. Two rings of lesions are then created in the left atrium - one completely encircling the left pulmonary veins and another completely encircling the right pulmonary veins; the two rings are usually joined by a linear lesion on the roof of the atrium.

- **Pulmonary vein antrum isolation (PVAI or Natale procedure) –** This procedure is a variant of the Haissaguerre procedure. It involves locating aberrant pathways through electrophysiological mapping (using a multipolar Lasso catheter) and ablating these pathways guided by an ultrasound (ICE) catheter. The ablation is performed as close as possible to the outside edge (antrum) of the junction between the pulmonary veins and the atrial wall. All four pulmonary veins as well as the superior vena cava (if indicated) are isolated during the procedure.

- **Substrate ablation** – This procedure was pioneered by Dr. Koonlawee Nademanee and involves locating (with CARTO mapping) sites with complex fractionated electrograms recorded during atrial fibrillation and then ablating them. An electrogram is a picture of the electrical activity of the heart as sensed from within the heart as opposed to an ECG which senses the activity from outside the heart. Fractionated electrograms are characterized by abnormalities in the baseline or a very short cycle length.

Some EPs use combinations of these procedures and some routinely perform a right atrial flutter ablation (ablation of the isthmus connecting the

tricuspid annulus and the inferior vena cava) as part of the overall procedure.

Roberto Mantovan and colleagues now report the results of a clinical trial to determine the success rates of the Pappone method in comparison with the Pappone method followed by segmental PVI as per Haissaguerre. The trial involved 60 afibbers (39 paroxysmal, 13 persistent, and 8 permanent) who were randomly assigned to undergo only circumferential anatomical PVI (Pappone protocol) or circumferential PVI followed by segmental PVI as per Haissaguerre. The difference of course being that in the Pappone method the ablation lesions are placed based on anatomical features of the heart, while in the Haissaguerre method they are placed based on actual electrophysiological measurements of electrical potentials in the heart.

The total procedure time, fluoroscopy time, and the time RF energy was actually applied were similar in the two groups – 227, 50 and 43 minutes versus 232, 55, and 42 minutes respectively. The patients were followed for an average of 15 months at which time 57% of the Pappone group were in normal sinus rhythm as compared to 83% in the group who had undergone the Pappone protocol followed by an EP study (with a Lasso catheter) to locate and ablate conductive pathways missed during the circumferential ablation. Four patients from each group (13%) underwent a repeat procedure. The researchers conclude that an ablation approach combining circumferential anatomical ablation with a subsequent electrophysiological approach is superior to the circumferential approach on its own.

Mantovan, R, et al. Comparison between anatomical and integrated approaches to atrial fibrillation ablation: adjunctive role of electrical pulmonary vein disconnection. **Journal of Cardiovascular Electrophysiology**, *Vol. 16, December 2005, pp. 1293-97*

CARTO mapping integrated with CT scan

LONDON, UNITED KINGDOM. Although the use of electroanatomic mapping techniques (CARTO) has greatly improved the EP's ability to visualize the structure of the heart, it still provides a pretty crude picture. Efforts have been underway for a while to integrate more detailed pictures of the heart with the CARTO image. Now researchers at St. Bartholomew's Hospital report on their experience with integration of a CT scan of the heart with the standard CARTO image. Their study group involved 30 patients (average age 59 years, 25 male) 12 of whom had paroxysmal and 18 of whom had persistent AF. The patients all had a multi-slice (8 slices) helical CT scan prior to their ablation. The scan was then aligned to the CARTO image using the pulmonary veins as landmarks. The integration (registration) was performed using the *Cartomerge* software and was found to be accurate to within 2.3 mm. The registration accuracy was not affected by whether the patients were in sinus rhythm or afib at the time the CT scan was taken. The integrated map was used to guide the encirclement of the pulmonary veins and achieved this successfully in 97% of cases. However, 15 (50%) of the patients required cardioversion at the end of the procedure since normal sinus rhythm had not been achieved as a result of the ablation. The authors provide no data with which to judge the long-term success of the procedure.

Kistler, PM, et al. Validation of three-dimensional cardiac image integration: Use of integrated CT image into electroanatomic mapping system to perform catheter ablation of atrial fibrillation. **Journal of Cardiovascular Electrophysiology**, *Vol. 17, April 2006, pp. 341-48*

Editor's comment: Researchers at Johns Hopkins University School of Medicine have carried out similar experiments using integration of the CARTO image with CT scans and MRIs. They were able to achieve complete isolation of 32% of the pulmonary veins encircled, but had to complete the procedure using the old standby, the Haissaguerre method. At the 6-month follow-up, 80% of paroxysmal patients, 50% of persistent afibbers, and 0% of permanent afibbers exposed to the protocol were still in normal sinus rhythm.[1] This is not an overwhelmingly impressive result.

Although the successful integration of CT scans and MRIs with the CARTO system is no doubt a technological triumph, it does not, so far at least, seem to have improved the success rate for the electroanatomical (Pappone) approach. The segmental and antrum isolation procedures developed by Prof. Haissaguerre and Dr. Natale are still the "gold standards", at least when performed by a highly skilled and experienced EP.

[1] Dong, J, et al. Initial experience in the use of integrated electroanatomic mapping with three-dimensional MR/CT images to guide catheter ablation of atrial fibrillation. **Journal of Cardiovascular Electrophysiology**, *Vol. 17, May 2006, pp. 459-66*

My AF Story – Or 'How it Zaps You When You're Not Looking'

by Anthony Bestwick

My story starts some 12 years ago in those heady days when the world didn't seem to have quite so many problems as it does now. I was a 50 year old silversmith with my own small business in a small town on the coast of Devon, in the south west peninsula of the United Kingdom, and spent my leisure time collecting rocks, exploring the old tin and copper mines of Devon and Cornwall, playing the melodeon and bodhran in the local pubs, and flying small aeroplanes from nearby Dunkeswell aerodrome, a one-time US Navy wartime bomber base flying Liberators across the Bay of Biscay.

I had been divorced for a few years after a long marriage and was, emotionally, on the fragile side of neutral, though I doubt I would have agreed with that if you'd mentioned it then! As is the way of these things I'd eventually found myself with a new girlfriend and that, dear reader, is where my story really starts.

We split up. Nothing really unusual about that, although it was as always painful, but this split coincided with one of my frequent bright (or, in this case, not-so-bright) ideas. I'd lose weight. Go on a diet. Not eat very much. In fact, not eat at all. I certainly was not overweight at 13 stone (184Lb) but summer was coming and I was determined to lose a few pounds to be able to get into my summer shorts.

Now, I don't know whether you've tried not eating but I don't recommend it. In my case it brought on quite persistent pangs of hunger and a distant rumbling from down-under which, try as I might, I could not ignore. I cast around for some way to lessen the noise and my gaze fell on ….. the coffee maker, with its usual welcoming smile, in the corner of my office-cum-workshop.

And so it came to pass that, in the same week as the emotionally draining split from my girlfriend, I came to live on strong black coffee – as black as the night and as strong as the bond between miser and dollar. The coffee machine happily worked overtime, spewing out great mugs of the stuff in response to my ever-increasing hunger pangs until I looked more like a coffee picker than an English silversmith.

By the third day I began to suffer bouts of what I fondly thought was indigestion, a general rumbling and banging inside which reminded me very much of an old car I once had. I ignored it, and carried on with the coffee therapy but by the following Monday, a full seven days after the start of my crash diet, I felt unwell enough to take the monumental plunge of visiting my local doctor, to complain about my indigestion.

I duly arrived at the appointed hour, expecting – indeed resigned – to be given some indigestion medicine and be sent on my way with a flea in my ear for wasting his time. But no! 'Come in' he said 'you don't look terribly well'. 'No' I said 'I think I've overdosed on coffee and it's given me indigestion'. 'Well' he said 'let's just listen to your …… Nurse!' he shouted 'get the ECG equipment ready'.

And that, fellow afibber, was the first time I knew I'd got a problem!

To cut a long story short, my ECG showed the usual and I was whisked off to the hospital in nearby Exeter, a rather grand place smelling of disinfectant and full of ill people. I say 'whisked' but in the absence of any form of public transport including an ambulance I was apologetically asked if I would make my own way there, which I did.

On arrival at the hospital I was taken to a ward, made a fuss of, given a loading dose of sotalol and asked to get into bed. Now, I have to confess that I don't like hospitals. Even less do I like wearing pyjamas or getting into bed in the daytime – and anyway, I only had indigestion – so this now became a battle of wills. 'I'm not taking my jeans off' I said. 'You must' they said. 'I won't' I said, 'I'm not ill'. Well, we eventually compromised. My jeans

didn't come off but I did eventually get into bed, though only when it got dark. They didn't really mind. They were very good.

I was hooked up to a variety of machinery and told that cardio-reversion was going to be done the following day but, during the night, my heart went back into sinus and the following day, to my great relief, I was given my freedom and let out. Before leaving I'd had a long chat with a heart specialist who told me that I had had Atrial Fibrillation, probably caused by too much caffeine, and that it would probably now be a feature in my life. 'One more thing' he said 'You'd better tell the Civil Aviation Authority about this'.

I did, and they very unhelpfully suspended my flying medical certificate. That was the first impact that AF had on my life. There were to be others …….

After discharge from hospital I had, as a follow-up, the usual thyroid test and echo-cardiogram, all of which proved to be normal. Slowly, I reverted back to my usual way of life and resumed 'business as usual' apart from the flying, which I really missed. Months went by, and I started to think that it had all been a bad dream. I began to rediscover my love of strong black coffee when suddenly, out of the blue, wham! AF again.

This time the episode did not last long, just a few hours, but I knew then that the original 'happening' had not been a one-off and that AF was probably here to stay.

In those far off days ablation was very much in its infancy in the UK and only done for flutter – to some extent it still is even today, as we shall see – so the solution put forward by medical opinion in the form of the local doctor offered nothing more than pills. True, there was available an intriguing variety of pills and as many as I could eat, but pills are something else I don't much care for. I decided this was not an option.

Months passed with a few minor episodes of AF, all of which reverted to sinus within a fairly short time but which nevertheless made me very conscious that 'I had a problem'. As these months passed I became more and more determined that the solution – for me – would be to beat this thing on my own terms. I began to realize that, to some extent and in some people, AF is life-style problem and so I determined to find out, as far as was possible, what might be triggering these episodes in me.

First, my coffee machine was consigned to history, though I subsequently bought another when I realized you can make thoroughly decent decaffeinated coffee which tastes just as good as the stuff with caffeine! I had always taken several grams of vitamin C a day but I now included a whole range of other vitamins and health supplements and made serious efforts to determine what part of my daily life might be causing my AF.

Eventually, through trial and error, I found that caffeine, emotional sadness, hard cheese, bananas and sleeping on my left side were the main triggers for me. Alcohol, to my delight and the relief of the world's wine growers, has never been a trigger but I know that it is for many. I only ever drink red wine in moderation and the occasional beer when playing my melodeon (though not at the same time) so it may be that spirits do not agree with me, but red wine and the odd beer certainly do.

Time passed and I formed a folk band with a banjo-playing friend, and then a delightful lady who sings and plays the guitar also joined the band. Dear reader, the course of true love ran true, and this lady has now been my wife for the past 6 years.

Happiness does I'm sure lessen the effects and frequency of AF but, to counter that, the taxman certainly does not so I continued to have the odd episode of AF as the months and years went by. And then, a dear old friend died.

This friend was rather old and had been the best friend of my own dear father, who had died when I was 13, so there was a great bond of fondness between us, reinforced by the fact that he did not himself have any family. By this time my wife and I had moved from Devon to South West Wales, where we now live, so as soon as we heard the sad news we drove the 200 miles to where he lived and started to make arrangements for his funeral.

By the time I arrived, I was in the grip of the worst AF episode I had ever had. My heart was fluttering, racing and banging like an old tin can, I had no discernable pulse, and I was as white as a sheet and feeling pretty low. There was no alternative but to carry on with the arrangements and attend the funeral but after that, in company with good friends and with a glass of red wine, I began to feel better and as I did so my heart reverted to sinus. But it was a terrible shock and what has since followed, and the subsequent operation to cure my AF, is all as a direct result of knowing that extreme sadness was always going to trigger AF no matter how well I looked after myself.

Months passed without any further serious episodes, but in my mind was the certainty that sooner or later this thing would rise up and strike me again. I'd heard of catheter ablation and had been told that it offered the best chance of a cure, so I made real efforts to see whether this could be done for me 'free' on our National Health Service. I say 'free' but of course although the NHS is free at the point of contact we do pay for it through our taxes, and in my lifetime I must have paid for the operation many times over.

Although kind and considerate and ready to offer a whole warehouse full of pills the NHS – bless them, they only get 90 thousand million pounds sterling a year in funding – simply could not offer me catheter RF ablation for AF. They might, just might, have been able to offer flutter ablation if I'd waited until I was dead, but what would be the point of that when I needed AF ablation and wanted to get on with my life now?

The next avenue to explore was to see if the operation could be done privately within the United Kingdom at reasonable cost and in a reasonable time scale. Nope! £15,000 and a long wait if you were lucky enough to find someone needing to practice the operation, in an environment where AF ablation is a pretty new science. First of all, £15,000 was simply off the board – I don't actually believe there's that much money in the world – and secondly, I'd prefer not to be somebody else's learning curve.

So, what to do? The usual well-known centers of medical excellence such as the USA, Canada, France and Germany were all very expensive or still learning how to respond to emails. It seemed I had reached an impasse and was doomed! And then, like a sunbeam bursting through clouds, I discovered India!

India, as many will know, is a land of gentle friendly intelligent people. It is a pragmatic land, an emerging world power and – more importantly – the world's largest democracy. A land of the future certainly, but not, in my mind, a world centre of excellence for medical procedures.

How wrong I was! A few simple clicks on my computer and the amazing medical facilities of India lay before my eyes - and there it was! At the Escorts Heart Institute and Research Centre (EHIRC) in New Delhi I could get RF catheter ablation for AF, including carto-mapping, for the all-inclusive price of £2,300.

I contacted the Taj Medical Group within the UK, who can facilitate arrangements for medical procedures in India, and within days I had made the decision to go to EHIRC and have the full works. Arrangements were soon made and within weeks of discovering the medical facilities of India I found myself at Heathrow Airport in London going through the interminable – *Take your belt off. Take your keys out. No, don't let your trousers fall down, shuffle through that archway* – but necessary security checks before boarding an overnight flight to New Delhi with the excellent Virgin Atlantic.

There can be few finer things than to arrive in India, bleary-eyed from an overnight flight, in the morning rush-hour! Well, perhaps a few but the first thing I saw on leaving the baggage reclaim, apart from a few welcoming flies and the lovely sunshine, was a smiling young Indian holding up a board upon which was written my name in very large letters. Yes, EHIRC had sent a chauffeured car, and the head of their hospitality department, to whisk me off to the hospital! Despite the traffic and the odd cow we arrived and, after a few formalities, I was shown to a spotless room with panoramic views of New Delhi - and a daunting array of medical machinery on the wall above the bed.

I had many visitors during my stay, and without any doubt, received VIP treatment from everybody. Tests started almost immediately, and I was wheeled down to various laboratories over the next two days for a variety of procedures which were designed to diagnose my condition exactly and determine the treatment required. My only real problem was with the enormous baggy white draw-string two-part smock everyone has to wear, which

needs a masters in cunning if you are to avoid it falling down to your ankles every few minutes. I never quite got the hang of it. They probably still talk about it.

The tests, apart from one, were all quite reasonable and very thorough. I was always wheeled to these tests by two or three impossibly young but excellently trained nurses, one to push, one to make sure I didn't fall out and probably one to make sure my smock stayed up. The hospital was very busy – they do over 500 catheter ablations per year plus every other form of heart surgery including pediatric – and was highly efficient and superbly well organized.

India, as you will know, is a land of Tigers and Elephants. The Tigers tend to snack off people so are avoided but Elephants are very popular. They come in all sizes, are usually grey and most of them have trunks. I say 'most' because some must be missing their trunks because that, dear reader, is what they put down your throat when they do the transesophageal echocardiogram - and they must be from fully-grown Elephants, too.

My surgeon was the brilliant Dr. Balbir Singh, principal consultant cardiologist working with the world famous heart surgeon Dr. Naresh Trehan and, all tests being OK, my operation was scheduled for the following day. Everything went well. The AF was induced, carto-mapped and ablated, and after 4 hours I was wheeled into catheter recovery for a very welcome cup of tea. The operation itself consists of feeding 4 catheters up through veins in your groin into your heart, which sounds scary but is in fact quite OK. The surgeon then induces the AF and maps the electrical conductivity of the heart to determine the areas to ablate, and then zaps these areas with RF energy.

The hospital was superbly equipped and the surgeons, doctors and nurses are clearly as good as any in the world. The food was excellent, with a choice of continental or Indian cuisine (I had fish curry every day. I'd go back just for that!) and the care and cleanliness is exceptional, the hospital priding itself on a 0.3% infection rate.

Following my ablation I had a 24-hour Holter monitoring and then, when that was complete and the results checked I was pronounced free to leave. I could have stayed on in India – the Taj Mahal is not far way – and the hospital would gladly have arranged things for me but my wife was at home in Wales so I was keen to return. Normally, when I find myself in a land of sunshine and about to board a plane to return to rain and grey skies, I have to be forced aboard and chained to my seat but this time the allure of my wife made me happy to skip aboard for the 8 hour flight to London and the inevitable rain. I had been in India altogether for 5 days, but it seemed rather longer.

As I write this it is now just three months since I returned from India. I was told by Dr. Balbir Singh that the heart can take this long to heal and settle down, but I have experienced no problems so far and I am confident, as is Dr. Balbir, that my AF really has been ablated. Time will tell, but as each day passes my confidence increases.

Did I make the right decision to go to India? Definitely. Five days in an excellent air-conditioned room with panoramic views, satellite TV, Internet facilities and all the tests and treatment for £2,300 sterling (less than 4,000 USD) was simply amazing. Would I recommend the medical facilities of India to anyone else who needs treatment that they cannot get or cannot afford in the affluent west? Certainly, without doubt. There are many world centers of excellence in India offering almost every medical procedure.

As far as one can enjoy these things, I did enjoy my trip to India. From the excellent Virgin Atlantic flight to the friendliness and competence of the hospital staff, from the delicious food to the friendships made, from the sunshine to the allure of a new and exciting land – yes, I did enjoy it. But I will never be able to look at an Elephant in quite the same way again and I will never, but never again, wear a huge and baggy white two-piece draw-string smock with a mind of its own!

Anthony Bestwick: Anthony.bestwick@btinternet.com
Escorts Heart Institute and Research Centre website: www.ehirc.com
The Taj Medical Group: info@tajmedicalgroup.co.uk
The Medical Tourist Company: www.medicaltourist.co.uk

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