Managing atrial fibrillation in the Accident and Emergency department

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Summary

We surveyed Accident and Emergency (A&E) consultants in England by questionnaire, on their management of patients presenting with AF. Completed questionnaires were received from 124 (45\%). Most (42\%) would use digoxin as first-line treatment for rate control of AF; 28\% would not treat AF acutely but would refer the patient to the medical team; 59\% would cardiovert a patient with AF in A&E, if there was evidence of cardiovascular compromise. Some 51\% would not routinely initiate any anticoagulation therapy. Faced with a patient in fast AF who was haemodynamically unstable, 67\% would immediately opt for electrical cardioversion, 13\% would refer the patient directly to the medics and 15\% would initially treat with intravenous digoxin. Given a patient in fast AF and cardiac failure, 55\% would treat with digoxin. Asked about AF related to Wolff-Parkinson-White syndrome, 37\% would initially give adenosine, 23\% would opt for immediate DC cardioversion and 25\% would refer directly to the medics; however, a minority would still give a rate-limiting calcium antagonist or digoxin. The majority (79\%) would not treat AF in a known alcoholic with acute intoxication who was haemodynamically stable. Consultants were more likely to initiate treatment if the patient had signs of shock or heart failure. Where there were underlying medical problems they were more likely to refer the patient directly to the medical team. There was a general reluctance to initiate anticoagulation, and some difference in opinion over how long AF should have persisted for anticoagulation to be necessary in the context of electrical cardioversion. Given the current evolution of A&E as an acute speciality, A&E clinicians should at least initiate management of patients with AF and be prepared to care for them for some time in A&E.

Introduction

Atrial fibrillation (AF) is a common sustained rhythm disorder, affecting up to 4\% of those over 60 years of age.\textsuperscript{1} It is probably the most common chronic arrhythmia requiring treatment in the Accident and Emergency (A&E) department, and in one survey of hospital admissions for cardiac arrhythmias, AF accounted for 34\% of admissions.\textsuperscript{2}

There are many different aetiologies and presentations of AF,\textsuperscript{3} and a variety of options in the acute management of such patients in the A&E setting.\textsuperscript{4,5} Even among consultant physicians, surveys report wide variation in management practices, especially with regard to consideration for cardioversion and antithrombotic therapy.\textsuperscript{6–8} Limited information is available on management practices for AF in the A&E setting, at least in the UK, even though an understanding of current practice is useful in helping formulate practice guidelines and care pathways. In the US, there has even been recent interest in the possibility of...
selected patients with AF being managed in the A&E department and discharged, rather than being admitted under the medical team.\textsuperscript{5,9,10}

We perceived that clinicians in many A&E departments in England prefer to refer patients with AF to the medical team as soon as possible rather than initiate treatment in the A&E department. We also hypothesized that there was likely to be significant variation in the management of AF by A&E clinicians. To investigate these aspects further, we conducted a questionnaire survey of A&E consultants in England, with regard to their management practices of patients presenting with AF.

**Methods**

A standardized questionnaire was sent to consultants in A&E departments in England who were identified from the Directory of Emergency Medicine and Critical Care. The questionnaire was initially piloted amongst local A&E consultants and consultant physicians, and included questions on the number of patients the doctor was likely to see with AF in a typical week, how these would present to A&E, what the first-line treatment for rate control would be, and the role of cardioversion and anticoagulation in A&E.

There were also five ‘case scenarios’ where respondents were asked to indicate their preferred immediate management of patients with AF presenting with, or related to, the following: (i) haemodynamically unstable AF; (ii) heart failure; (iii) thyroid disease; (iv) Wolff-Parkinson-White disease; and (v) alcohol abuse (Table 1).

**Results**

We sent 287 questionnaires to A&E consultants between February and May 2001. Completed questionnaires were received from 124 (43\%). Two were returned as undeliverable, two were returned because the department had become a minor injuries unit and one was returned with a comment that one completed questionnaire had already been returned from the department. Thus, the overall response rate was 45\%.

Most consultants (54\%) reported that they saw 1–5 patients with AF per week, although 23\% said they saw > 10 (Table 2). The most common presentations given were palpitations (34\%) and ‘other’ (27\%). Presentations specifically mentioned under ‘other’ included ‘asymptomatic’ or incidental finding, collapse, ‘unwell’ and ‘chronic’ (Table 3). The second most common presentations were felt to be heart failure (28\%) and chest pain (24\%).

When asked to choose between a beta-blocker, verapamil or digoxin as the first-line treatment for rate control of AF, 52 consultants (42\%) said they would use digoxin. Thirty-five consultants (28\%) said they would not treat AF acutely but would refer the patient to the medical team. Twenty-five (20\%) said they would use some other treatment for rate control, with amiodarone, diltiazem and flecanide being specifically mentioned. Most consultants (39\%) would administer the drug intravenously.

Seventy-three (59\%) of the respondents stated they would cardiovert a patient with AF in the A&E department, if there was evidence of cardiovascular compromise. Eleven consultants (9\%) stated they would only cardiovert if they knew that the AF was acute, and 19 (15\%) would cardiovert only if there was cardiovascular compromise and the AF was acute. Three respondents (2\%) stated that the decision should be left to the medical team, and four (3\%) said they would never cardiovert anyone in AF in the A&E department. Four (3\%) mentioned that they would attempt cardioversion if attempted rate control had been unsuccessful.

More than half the consultants (51\%) would not routinely start any anticoagulation therapy in the A&E department. Several of these commented that

<table>
<thead>
<tr>
<th>Case scenario</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Clinical features</th>
<th>Diagnosis (not mentioned on questionnaire)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>72</td>
<td>M</td>
<td>Fast AF, dyspnoea, tired, systolic BP of 70 mmHg</td>
<td>Haemodynamically unstable AF</td>
</tr>
<tr>
<td>2</td>
<td>45</td>
<td>F</td>
<td>Fast AF, anxiety, tremor, known thyroid disease</td>
<td>Thyroid disease related AF</td>
</tr>
<tr>
<td>3</td>
<td>65</td>
<td>M</td>
<td>AF, rate 120, raised JVP, BP 110/70 mmHg, basal crepitations and peripheral oedema</td>
<td>Heart failure secondary to rapid AF</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
<td>M</td>
<td>Palpitations, heart rate 200, recently referred to cardiologist for ‘funny heart tracing’</td>
<td>Wolff-Parkinson-White syndrome</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>M</td>
<td>Known alcoholic, drunk on whisky, AF rate 120, BP 150/98 mmHg, no evidence of heart failure</td>
<td>Alcohol-induced AF</td>
</tr>
</tbody>
</table>
the medical team would do so once the patient was referred to them. Forty-five (36%) would start heparin, with 17 (14%) giving intravenous heparin and 28 (22%) giving low-molecular-weight heparin subcutaneously in the A&E department.

When faced with a clinical case scenario of a patient in fast AF who was haemodynamically unstable, 83 (67%) of the respondents would immediately opt for electrical cardioversion, six (5%) would do so after discussing the patients with the medical team, and 16 (13%) would refer the patient directly to the medics. Eighteen (15%) would initially treat with intravenous digoxin.

In answer to the scenario involving a woman with AF related to thyroid disease, 54 (44%) of consultants said they would treat with a beta-blocker, with 42 (34%) giving it orally and 12 (10%) giving it intravenously. Fifteen (12%) would give digoxin and 45 (36%) would refer directly to the medical team.
Given the scenario of a patient in fast AF and cardiac failure, the majority of respondents (54.9%) would treat with digoxin, with 44 (35.5%) giving it orally and 24 (19%) giving it intravenously. Two (1.6%) would cardiovert the patient electrically, 22 (18%) would refer directly to the medics and 19 (15%) would treat the cardiac failure in preference to the AF.

When asked about a young man with a tachycardia of 200 and a previous history suggestive of Wolff-Parkinson-White syndrome, 46 (37%) of respondents said they would initially give adenosine. Twenty-nine (23%) would opt for immediate DC cardioversion and 31 (25%) would refer directly to the medics. Five (4%) would give a rate-limiting calcium antagonist and five would give digoxin. Twelve (7%) would administer a beta-blocker.

The majority of consultants (79%) would not treat AF in a known alcoholic with acute intoxication and AF who was haemodynamically stable. Fifty-four (43%) would observe and monitor until the patient was sober, and 45 (36%) would refer directly to the medical team. Four (3%) would give a beta-blocker and 11 (9%) would give digoxin.

The responses to the case scenarios are summarized in Table 4.

**Discussion**

This study is limited by being a questionnaire-based survey, its modest response rate and the possibility that the answers given do not reflect the actual clinical practice of the participants. Nevertheless, we are unaware of other data on the current management practices of AF in the A&E department by A&E consultants in England. One possible reason for the poor response rate could be that we sent questionnaires to each A&E consultant, rather than to each A&E department, and it is probable that more than one department felt that a single response was adequate, given the likelihood of many departments having many management protocols in place. Certainly, two respondents enclosed their own department’s protocol or guidelines for the management of patients in AF. It is also possible that some consultants had moved and did not receive the questionnaire, which was not returned. Finally, not all questions were answered in every case, and in some cases, the respondent felt that they would like to have more clinical information before making a decision.

As expected, there were wide variations in practice. AF remains a common arrhythmia, with most consultants seeing 1–5 patients per week and 23% seeing >10/week; indeed, AF was present in 6% of acute medical admission to a Scottish district...
general hospital. Almost one third of consultants surveyed stated they would never treat AF acutely but would refer the patient directly to the medical team, although when given a case scenario of someone with haemodynamic instability, only 13% would not initiate some form of treatment. Similarly when faced with a patient in cardiac failure, only 18% would refer directly to the medics. The majority of A&E consultants thus seem willing to initiate some resuscitative measures for patients with decompensated AF. Nevertheless, two respondents wrote on their questionnaire that they were very unhappy that ‘direct referral to the medical team’ was included as a possibility for each of the case scenarios. They felt that it was important that A&E clinicians should at least initiate management of patients and be prepared to care for them in the A&E department.

There was a relatively high level of agreement on when to cardiovert a patient with AF, with many consultants quoting the ALS guidelines. Twenty-four percent mentioned that the AF should be acute rather than chronic, but there were various timescales quoted from <12 h duration to <3 weeks. This is cause for some concern, especially since only 36% would start anticoagulation in the A&E department. Furthermore, the duration of AF is important, as 48 h is considered the timepoint beyond which left atrial appendage thrombi may form, and post-cardioversion atrial stunning is likely to occur. A clear history of AF onset is often crucial, as in some patients the onset of AF may have been asymptomatic, and in one transoesophageal echocardiographic study, nearly 15% of patients with recent-onset (<72 h) AF had evidence of atrial thrombi. Current guidelines from the 6th American College of Chest Physicians state that anyone with AF of >48 h duration should be anticoagulated with warfarin for a minimum of 3 weeks, and the cardioversion and warfarin continued for a minimum of 4 weeks post-cardioversion. Nevertheless, in more urgent situations when 3 weeks’ wait is not possible, the patient should be started on heparin, the cardioversion performed and warfarin continued for a minimum of 4 weeks.

When given the clinical scenario of a patient in AF with cardiovascular compromise, 72% would choose electrical cardioversion and 15% would give digoxin. Several of those who said they would give digoxin mentioned that they would like to know how long the AF had persisted, as they would cardiovert if it was of recent onset. These answers were again in keeping with the ALS guidelines, which suggest initial rate control may be attempted with beta-blockers, verapamil, diltiazem or digoxin. However, 42% of consultants stated they would use digoxin as a first line treatment for rate control. Digoxin is useful for control of the resting ventricular rate in AF, but ineffective for rate control during exercise or in conditions of high sympathetic drive, including pyrexia or severe heart failure. In these situations, rate-limiting calcium antagonists (verapamil or diltiazem) and beta-blockers are more effective for rapid rate control in the A&E setting, and when digoxin is used alone there is a tendency for a relapse into unstable heart rates after initial rate control. Digoxin is also ineffective for cardioversion, and may be detrimental in paroxysmal AF. It is therefore recommended that digoxin should mainly be used as a second-line treatment or reserved for those with congestive cardiac failure. The majority of respondents did say they would use digoxin for case 3, the scenario of a man with fast AF and cardiac failure. Interestingly, many consultants would administer digoxin intravenously, even though there is little pharmacological advantage over the oral route, except in patients who are vomiting or unable to swallow. Flecainide was also mentioned as a drug used for rate control in the acute setting, and whilst the value of this agent in cardioversion and paroxysmal AF is established, the use of flecainide simply for heart rate control in permanent AF may be inappropriate.

There was a high level of agreement between respondents on the management of a patient with AF associated with alcohol abuse. Only 12% would initiate some specific treatment for the AF, and many specified that they recognized this as being a classical presentation of transient AF that should most likely be self-limiting. Indeed, alcohol may account for two-thirds of new-onset AF in patients aged <65 years. Similarly, with a patient with AF associated with thyrotoxicosis, only 15% would do something other than referring directly to the medical team or giving a beta-blocker. However, over one third would choose to refer the patient on rather than initiating treatment in A&E.

There were more differences in opinion over the case history of a young man with AF and a previous history of a ‘funny heart tracing’. Interestingly, many A&E consultants would give adenosine, digoxin or a rate-limiting calcium antagonist, despite concerns that using drugs that act on the atrio-ventricular node would enhance conduction in the accessory pathway present in Wolff-Parkinson-White syndrome, resulting in malignant arrhythmias, hypotension and even death.

Interestingly, half the respondents would not consider initiating anticoagulation in the A&E department, despite recommendations that patients presenting acutely with AF should at least be started on anticoagulation with heparin, pending further
evaluation on the need for long-term thrombo-
prophylaxis.\textsuperscript{17,19} This is in keeping with the high
thromboembolic risk associated with AF, especially
in association with acute conditions, such as heart
failure.\textsuperscript{14,17} While there are limited data in acute
AF \textit{per se}, the benefits of long-term antithrombotic
therapy in AF are clearly established, and risk
stratification to identify the patients at highest risk
of stroke and thromboembolism is possible, even
on clinical grounds, and without the need for
echocardiography.\textsuperscript{20} The role of low-molecular-
weight heparin in AF is still uncertain, and ongoing
studies will hopefully address this.

The overall trend seen in the responses received
was that the consultants were more likely to initiate
treatment if the patient had signs of shock or heart
failure. Where there were underlying medical
problems, they were more likely to refer the patient
directly to the medical team. There was a general
reluctance to initiate anticoagulation, this being
seen as something best handled by the medical
team, and some difference in opinion over how
long AF should have persisted for anticoagulation
to be necessary in the context of electrical
cardiovation. Given the current evolution of A&E
as an acute speciality, A&E clinicians should at
least initiate management of patients with AF and
be prepared to manage them for some time in
A&E department. Thus, it was reassuring that only
a small minority of respondents (2\%) said they
would refer all the patients directly without initiat-
ing treatment. Although the general clinical man-
agement of AF depends upon the type of AF
(acute, paroxysmal, persistent and permanent)
which defines the objective(s) of management,\textsuperscript{17}
the present survey suggests that clear, uniform
guidelines on the management of AF in the A&E
Department are also urgently required.

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