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Supplementary Material

Low Level of Knowledge of Atrial Fibrillation and Anticoagulant Treatment among Patients with Atrial Fibrillation Scheduled for Cardiac Surgery

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ABSTRACT

Objective: We investigated the knowledge about atrial fibrillation (AF) and oral anticoagulants (OACs) in AF patients scheduled for cardiac surgery compared with nonsurgical AF patients.

Methods: We recruited 144 consecutive patients with documented AF scheduled for cardiac surgery on admission (aged 68.9±8.4, male 60.4 %). The control group represented 200 age- and sex-matched AF patients without indications for surgery. Using the validated Jessa AF Knowledge Questionnaire (JAKQ), we tested their knowledge of AF and the use of OAC.

Results: The mean score on the JAKQ was 47±20 % in the surgery group and 59±18 % in the control group ($p<0.001$), without any questions in which the former group scored better. A higher level of knowledge was observed in patients taking vitamin K antagonists (VKA) in the past, and individuals free of heart failure, previous stroke, or peripheral artery disease. Patients had poor knowledge of the safety issues, including 27.5% of surgical patients who knew about possible painkillers use during anticoagulation compared with 43.8% in the control group ($p=0.002$). Patients scheduled for valvular surgery (n=88, 61.5%) scored better compared with those (n=26, 18.2%) for coronary artery bypass graft (CABG) surgery (49±19% vs. 35±18 %, $p=0.002$ respectively).

Conclusion: The level of knowledge about AF and its treatment, including the safety issues, is poor among AF patients admitted for cardiac surgery. More educational efforts should be taken in this vulnerable patient subset.

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Supplemental Table 1: Extended characteristics of the study population with differentiation of planned surgery.

	All (n=344)	**Surgery group (n=144)**	**CABG (n=26)**	**Valve surgery (n=88)**	**CABG + valve surgery (n=17)**	**Other surgery (n=12)**	**Control group (n=200)**
Age, year	68.6 ±10.5	68.9 ±8.5	69.7±6.7	68.8 ±9.0	70.8 ±6.7	64.8 ±8.5	68.4±11.8
Male gender, n (%)	205 (59.6)	87 (60.4)	24 (92.3)	45 (51.1)	11 (64.7)	6 (50.0)	118 (59.0)
Type of atrial fibrillation, n (%)							
Paroxysmal	146 (42.7)	48 (33.8)	13 (50.0)	22 (25.3)	8 (47.1)	5 (45.5)	98 (49.0)
Persistent	53 (15.5)	24 (16.9)	4 (15.38)	14 (16.09)	4 (23.53)	2 (18.18)	29 (14.50)
Permanent	143 (41.8)	70 (49.3)	9 (34.6)	51 (58.6)	5 (29.4)	4 (36.4)	73 (36.5)
Time interval since AF diagnosis, months,	48 (10-120)	36 (6-88)	4 (2-21)	48 (9.8-120)	36 (9-150)	54 (27-84.8)	48 (12-120)
Time interval since initiating the OAC, months,	15 (5-51)	10 (3-36)	2 (1-5.5)	12 (4-48)	9 (4.3-21)	12 (5.3-45.3)	24 (7.8-72)
Comorbidities, n (%)							
Heart failure	168 (48.8)	77 (53.5)	11 (42.3)	53 (60.2)	8 (47.1)	4 (33.3)	91 (45.5)
Arterial hypertension	292 (84.9)	128 (88.9)	24 (92.3)	78 (88.6)	15 (88.2)	10 (83.3)	164 (82.0)
Diabetes mellitus	112 (32.6)	46 (31.9)	13 (9.0)	22 (15.3)	10 (6.9)	1 (0.7)	65 (32.7)
Valve replacement	23 (6.7)	6 (4.2)	0 (0.0)	6 (6.8)	0 (0.0)	0 (0.0)	17 (8.5)
Mitral stenosis	10 (2.9)	6 (4.2)	0 (0.0)	6 (6.8)	0 (0.0)	0 (0.0)	4 (2.0)
Prior myocardial infarction	80 (23.3)	38 (26.4)	14 (53.9)	15 (17.1)	8 (47.1)	0 (0.0)	42 (21.0)
Prior stroke or TIA	48 (13.9)	20 (13.9)	5 (19.2)	9 (6.3)	1 (5.9)	5 (3.5)	28 (14)
Vascular disease	89 (25.9)	17 (11.8)	7 (26.9)	7 (7.9)	3 (17.7)	0 (0.0)	72 (36.0)
History of major bleeding,	22 (6.4)	12 (8.3)	0 (0.0)	1 (1.1)	0 (0.0)	0 (0.0)	11 (5.5)
Easy bruising,	131 (38.1)	55 (38.2)	5 (19.2)	39 (44.3)	6 (35.3)	5 (41.7)	76 (38.0)
Gingival bleeding	40 (11.6)	14 (9.7)	1 (3.9)	10 (11.4)	1 (5.9)	2 (16.7)	26 (13.0)

Abbreviations: AF: atrial fibrillation; OAC: oral anticoagulation; TIA: transient ischaemic attack. Data are given as mean± standard deviation, median (interquartile range), or number (percentages).

Supplemental Table 2: Specific topics addressed in the JAKQ with percentage of correct responses among AF patients in surgery and control group.

	All (n=344)	**Surgery group (n=144)**	**CABG (n=26)**	**Valve surgery (n=88)**	**CABG + valve surgery (n=17)**	**Other surgery (n=12)**	**Control group (n=200)**
8 questions about AF in general							
AF is a condition where the heart beats irregularly and often faster than normal	251 (72.9)	96 (66.7)	13 (50.0)	62 (70.5)	11 (64.7)	10 (83.3)	155 (77.5)
AF is not always accompanied by symptoms	82 (23.8)	26 (18.1)	3 (11.5)	14 (15.91)	5 (29.41)	4 (33.3)	56 (28.0)
Patients can detect AF by taking their pulse regularly	153 (44.5)	53 (36.8)	4 (15.4)	34 (38.6)	8 (47.1)	7 (58.3)	100 (50.0)
AF can cause blood clots which can lead to stroke (cerebral infarction)	214 (62.4)	78 (54.2)	12 (46.2)	45 (51.1)	10 (58.8)	10 (83.3)	136 (68.3)
Medication cannot prevent AF permanently, as the arrhythmia will increasingly occur with ageing, even when taking medication	114 (33.3)	51 (35.7)	3 (12.0)	36 (40.9)	6 (35.3)	6 (50.0)	63 (31.7)
An AF patient should not go to the general practitioner or emergency room each time he/she feels AF	87 (25.4)	25 (17.4)	4 (15.4)	13 (14.8)	5 (29.4)	3 (25.0)	62 (31.2)
Being overweight exacerbates AF	184 (53.8)	71 (49.3)	14 (53.9)	43 (48.9)	11 (64.7)	3 (25.0)	113 (57.1)
Blood thinners are often prescribed for patients with AF in order to prevent the development of blood clots in the heart, which can lead to stroke	244 (71.1)	87 (60.4)	13 (50.0)	55 (62.5)	10 (58.8)	9 (75.0)	157 (78.9)
5 questions about OAC therapy							
Patients with AF should always take their blood thinners, even if they do not feel AF	275 (80.7)	108 (75.0)	13 (50.0)	69 (78.4)	16 (94.1)	9 (75.0)	167 (84.8)
Possible side effects of blood thinners are the occurrence of bleedings and longer bleeding times in case of injuries	196 (57.7)	64 (44.8)	5 (20.0)	47 (53.4)	6 (35.3)	5 (41.7)	132 (67.0)
AF patients may only take painkillers based on paracetamol	123 (36.8)	39 (27.5)	2 (8.0)	29 (33.3)	4 (23.5)	4 (33.3)	84 (43.8)
When AF patients regularly have minor nose bleeds (that spontaneously cease), they should contact the general practitioner or specialist, while continuing to take their blood thinner	235 (69.1)	96 (67.1)	12 (46.2)	59 (67.8)	15 (88.2)	9 (75.0)	139 (70.6)
If an AF patient needs an operation, he/she should consult a doctor to discuss possible options	221 (64.8)	76 (52.8)	11 (42.3)	48 (54.6)	7 (41.2)	9 (75.0)	145 (73.6)
3 questions about VKA	n=173	n=64	n=1	n=47	n=9	n=7	n=109
AF patients taking VKA should have their blood thinning checked at least once a month	151 (87.3)	55 (85.9)	1 (100.0)	43 (91.5)	6 (66.7)	5 (71.4)	96 (88.1)
When AF patients taking VKA have forgotten to take their blood thinner, they should still take their forgotten pill (immediately or at the next dose)	38 (22.2)	9 (14.1)	0 (0.0)	6 (12.8)	0 (0.0)	3 (42.9)	29 (27.1)
INR is a measure to check how thick or how thin the blood is	133 (77.8)	40 (62.5)	0 (0.0)	33 (70.2)	3 (33.3)	4 (57.1)	93 (86.9)
3 questions about NOAC	n=197	n=96	n=25	n=49	n=12	n=9	N=101
For patients taking NOAC, it is important to take their blood thinner at the same time every day	178 (90.4)	85 (88.5)	21 (84.0)	44 (89.8)	11 (91.7)	8 (88.9)	93 (92.1)
When AF patients taking NOAC have forgotten to take their blood thinner, they can still take that dose, unless the time till the next dose is less than the time after the missed dose	59 (29.8)	26 (27.1)	4 (16.0)	16 (32.7)	2 (16.8)	4 (44.4)	33 (32.4)
The NOAC card should be shown to their general practitioner and specialist by AF patients	48 (30.0)	22 (25.0)	9 (37.5)	10 (22.2)	1 (11.1)	1 (11.1)	26 (36.1)

Abbreviations: INR: international normalized ratio; NOACs: non-vitamin K antagonist oral anticoagulants; VKA: vitamin K antagonist; other abbreviations-see Supplementary Table 1.