Atriyal fibrilasyon : tanım, epidemiyoloji ve klinik seyir

Dr. Murat Özdemir, FACC

Gazi Üniversitesi, ANKARA

AF Zirvesi, Mayıs 2013, KKTC

Tanım – ESC 2010 kılavuzu

3.1 Definition

AF is defined as a cardiac arrhythmia with the following characteristics:

(1) The surface ECG shows 'absolutely' irregular RR intervals (AF is therefore sometimes known as *arrhythmia absoluta*), i.e. RR intervals that do not follow a repetitive pattern.

(2) There are no distinct P waves on the surface ECG. Some apparently regular atrial electrical activity may be seen in some ECG leads, most often in lead V1.

(3) The atrial cycle length (when visible), i.e. the interval between two atrial activations, is usually variable and <200 ms (>300 bpm).

Tanım – ESC 2010 kılavuzu

3.2 Detection

An irregular pulse should always raise the suspicion of AF, but an ECG recording is necessary to diagnose AF. Any arrhythmia that has the ECG characteristics of AF and lasts sufficiently long for a 12-lead ECG to be recorded, or at least 30 s on a rhythm strip, should be considered as AF.[3,31] The heart rate in AF can be calcu-

Subclinical Atrial Fibrillation and the Risk of Stroke

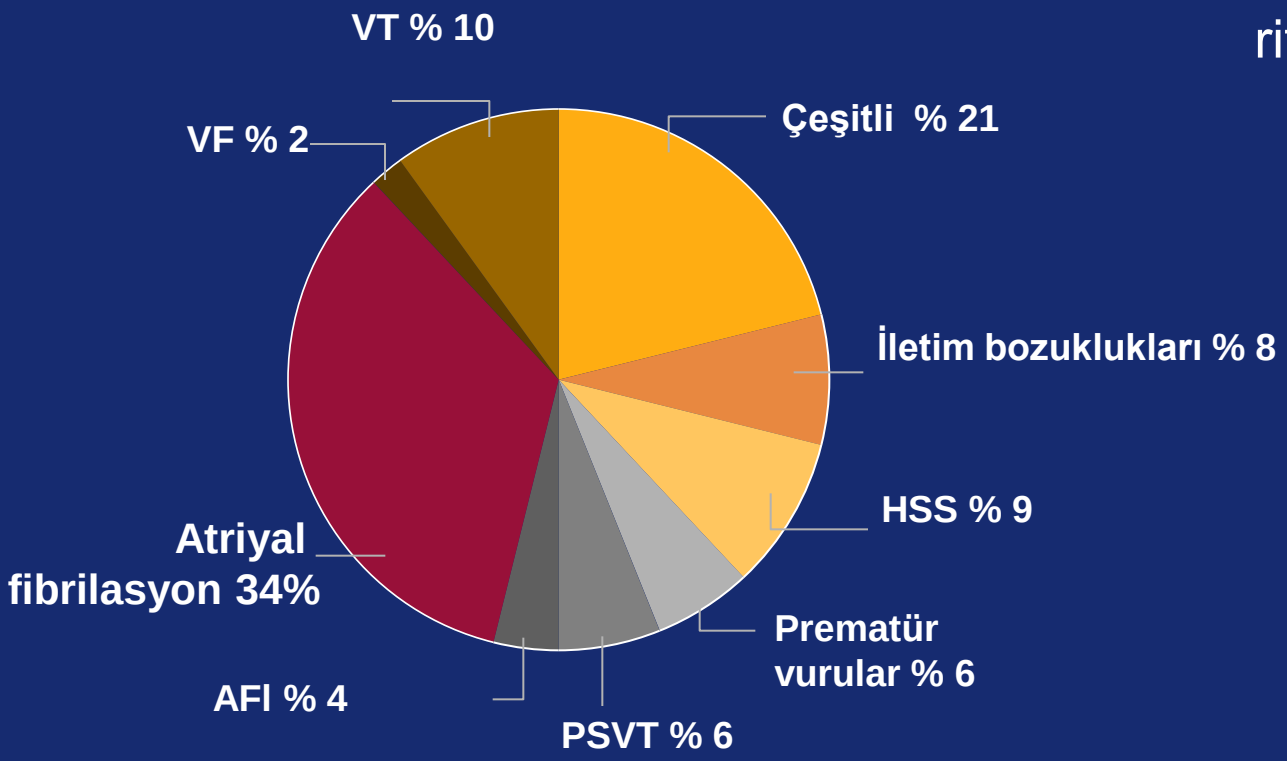
Jeff S. Healey, M.D., Stuart J. Connolly, M.D., Michael R. Gold, M.D., Carsten W. Israel, M.D., Isabelle C. Van Gelder, M.D., Alessandro Capucci, M.D., C.P. Lau, M.D., Eric Fain, M.D., Sean Yang, M.Sc., Christophe Bailleul, M.D., Carlos A. Morillo, M.D., Mark Carlson, M.D., Ellison Themeles, M.Sc., Elizabeth S. Kaufman, M.D., and Stefan H. Hohnloser, M.D., for the ASSERT Investigators*

enrollment. A subclinical atrial tachyarrhythmia was defined as an episode of rapid atrial rate (190 beats or more per minute), lasting more than 6 minutes, that was detected by the pacemaker or defibrillator.

Atriyal fibrilasyon
Epidemiyoloji

ABD’de aritmi-ilişkili hospitalizasyon

- En sık rastlanan sürekli ritm bozukluğu



Bialy D et al. J Am Coll Cardiol 1992;19:41A

Prevalence of Diagnosed Atrial Fibrillation in Adults

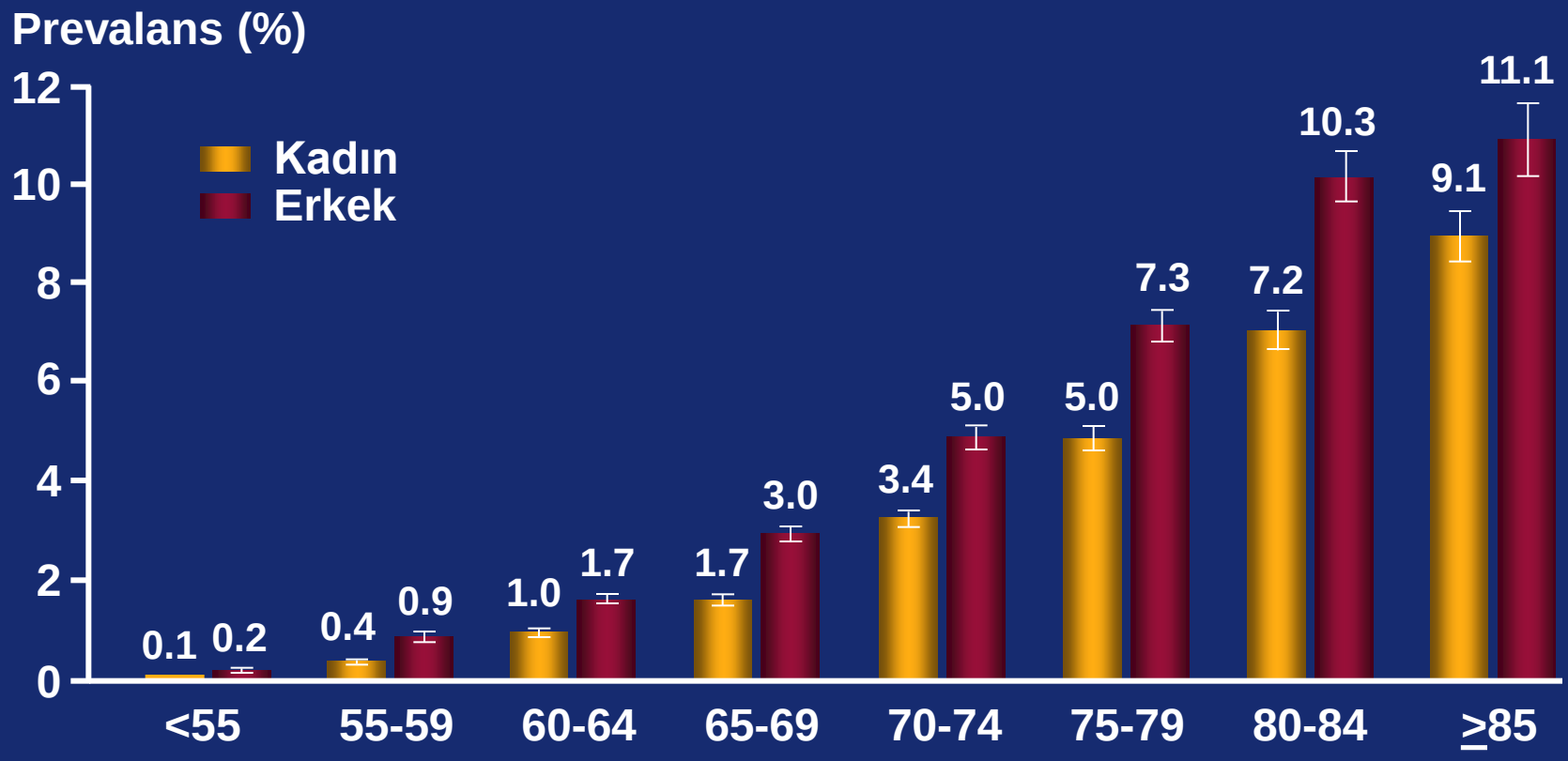
National Implications for Rhythm Management and Stroke Prevention: the AnTicoagulation and Risk Factors In Atrial Fibrillation (ATRIA) Study

- > 20 yaş, 1.89 milyon olgu
- AF prevalansı
  - Genel - % 0.95
    - Erkek - % 1.1
    - Kadın - % 0.8
    - Beyaz - % 2.2
    - Siyah - % 1.5

Go AS et al. JAMA 2001;285:2370-5

ATRIA çalışması

AF prevalansı

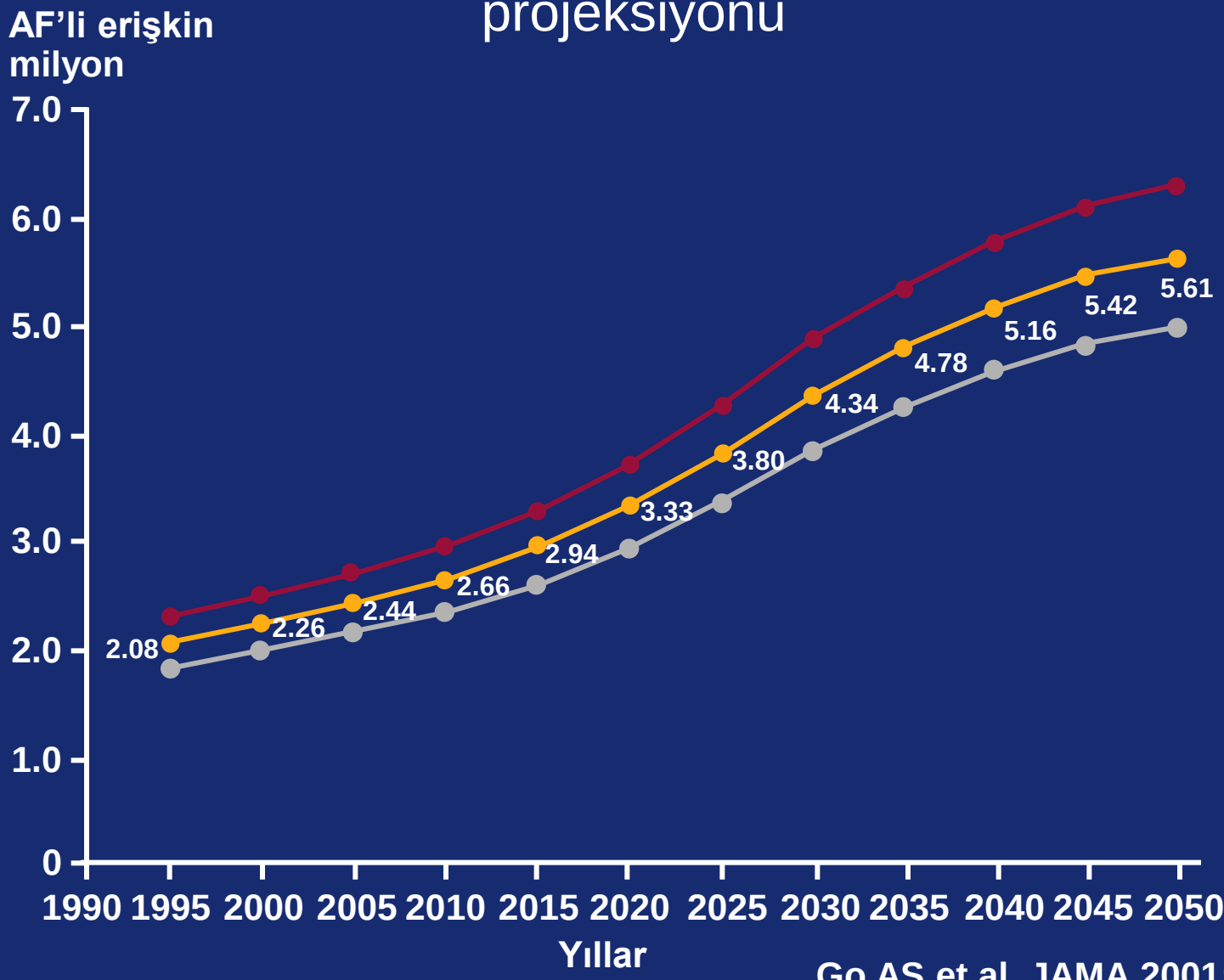


No								
Kadın	530	310	566	896	1498	1572	1291	1132
Erkek	1259	634	934	1426	1907	1886	1374	759

Go AS et al. JAMA 2001;285:2370-5

ATRIA çalışması

ABD'de 1995-2050 yılları için erişkin AF sıklığı projeksiyonu



Go AS et al. JAMA 2001;285:2370-5

European Heart Journal (2006) 27, 949–953
doi:10.1093/eurheartj/ehi825

EUROPEAN SOCIETY OF CARDIOLOGY®

Clinical research
Arrhythmia/electrophysiology

Prevalence, incidence and lifetime risk of atrial fibrillation: the Rotterdam study

Jan Heeringa[1], Deirdre A.M. van der Kuip[1], Albert Hofman[1], Jan A. Kors[2], Gerard van Herpen[2], Bruno H.Ch. Stricker[1], Theo Stijnen[1], Gregory Y.H. Lip[3], and Jacqueline C.M. Witteman[1*]

- Toplum temelli prospektif çalışma
- 55 yaş üstü 6808 olgu
- Yaklaşık 7 sene takip

Table 2 Prevalence with 95% CI of AF at baseline by gender and age. The Rotterdam Study 1990–93 ($n = 6808$)

Age group (years)	All			Men			Women		
	n	Cases	Cases/*n*[a]	*n*	Cases	Cases/*n*[a]	*n*	Cases	Cases/*n*[a]
55–59	1161	8	0.7 (0.4–1.4)	485	4	0.8 (0.3–2.1)	676	4	0.6 (0.2–1.5)
60–64	1411	24	1.7 (1.2–2.5)	620	16	2.6 (1.6–3.4)	791	8	1.0 (0.5–2.0)
65–69	1291	51	4.0 (3.0–5.2)	597	31	5.2 (3.7–7.3)	694	20	2.9 (1.9–4.4)
70–74	1130	68	6.0 (4.8–7.6)	464	32	6.9 (5.0–9.6)	666	36	5.4 (4.1–7.0)
75–79	855	77	9.0 (7.3–11.1)	330	43	13.0 (9.8–17.1)	525	34	6.5 (4.7–8.9)
80–84	533	72	13.5 (10.9–16.7)	164	25	15.2 (10.5–21.5)	369	47	12.7 (9.7–16.5)
≥85	427	76	17.8 (14.5–21.7)	95	17	17.9 (11.5–26.8)	332	58	17.5 (13.8–21.9)
All	6808	376	5.5 (5.0–6.1)	2590	165	6.0 (5.0–7.0)	4053	206	5.1 (4.5–5.8)

[a]Denotes % (95% CI).

Table 3 Incidence rates of AF with 95% CI by gender and age. The Rotterdam Study 1990–99 ($n = 6432$)

Age groups (years)	All		Men		Women	
	Cases/py	Rate (95% CI)[a]	Cases/py	Rate (95% CI)[a]	Cases/py	Rate (95% CI)[a]
55–59	3/2 741	1.1 (0.3–2.9)	3/1 140	2.6 (0.7–7.0)	–	–
60–64	27/8 361	3.3 (2.2–4.7)	17/3 496	4.9 (2.9–7.6)	10/4 821	2.1 (1.1–3.7)
65–69	54/9 817	5.5 (4.2–7.1)	28/4 269	6.6 (4.5–9.3)	26/5 548	4.7 (3.1–6.8)
70–74	100/8 662	11.5 (9.5–14)	45/3 627	12.4 (9.2–16.4)	55/5 035	10.1 (8.3–14.1)
75–79	101/6 899	14.7 (12.0–17.7)	51/2 566	19.9 (15.7–25.9)	50/4 332	11.5 (8.7–15.1)
80–84	92/4 445	20.7 (16.8–25.3)	36/1 414	25.5 (18.1–34.8)	56/3 031	18.2 (14.1–23.8)
≥85	60/3 294	18.2 (14.0–23.3)	18/709	25.4 (15.6–39.2)	42/2 585	16.2 (11.9–21.7)
All	437/44 175	9.9 (9.0–10.9)	198/17 223	11.5 (10.0–13.2)	239/26 952	8.9 (7.8–10.2)

py, person–years.
[a] Denotes per 1000 person–years.

Table 4 Cumulative risk of AF in percentages at different ages in men and women. The Rotterdam Study 1990–99 ($n = 6432$)

Age (years)	Period risk (%) in 5-years intervals							Lifetime risk (95% CI)
	5 years	10 years	15 years	20 years	25 years	30 years	35 years	
Men								
55	0.8	2.8	5.4	9.6	15.2	20.1		23.8 (15.6–26.9)
60	2.1	4.7	8.9	14.6	19.6			23.3 (15.1–26.4)
65	2.8	7.3	13.4	18.7				22.7 (14.3–25.8)
70	5.0	11.6	17.5					21.9 (13.3–25.2)
75	7.9	14.9						20.2 (11.1–23.8)
80	9.2							16.1 (6.4–20.3)
>85								11.8 (1.3–17.2)
Women								
55	0	1.0	2.9	7.2	11.1	16.3		22.2 (14.7–24.8)
60	0.9	2.9	7.2	11.2	16.4			22.3 (14.8–24.9)
65	2.0	6.4	10.6	19.1				22.1 (14.6–24.8)
70	4.6	9.0	14.7					21.1 (13.4–23.8)
75	4.8	11.2						18.3 (10.2–21.2)
80	7.4							15.3 (7.4–18.9)
>85								11.8 (1.9–14.1)

55 yaşında, hayat boyu AF gelişme riski :

Erkek - % 23.8
Kadın - % 22.2

Lifetime Risk for Development of Atrial Fibrillation

The Framingham Heart Study

Donald M. Lloyd-Jones, MD, ScM; Thomas J. Wang, MD; Eric P. Leip, MS; Martin G. Larson, ScD;
Daniel Levy, MD; Ramachandran S. Vasan, MD; Ralph B. D'Agostino, PhD;
Joseph M. Massaro, PhD; Alexa Beiser, PhD; Philip A. Wolf, MD; Emelia J. Benjamin, MD, ScM

- 40 yaş ve üstü, AF olmayan 8725 olgu
- 1968'den 1999'a dek takip

Circulation 2004, 110:1042-1046

TABLE 2. Lifetime Risk for AF at Selected Index Ages by Sex

Index Age, y	Men	Women
40	26.0 (24.0–27.0)	23.0 (21.0–24.0)
50	25.9 (23.9–27.0)	23.2 (21.3–24.3)
60	25.8 (23.7–26.9)	23.4 (21.4–24.4)
70	24.3 (22.1–25.5)	23.0 (20.9–24.1)
80	22.7 (20.1–24.1)	21.6 (19.3–22.7)

All values are percentages.

Circulation 2004, 110:1042-1046

TABLE 3. Lifetime Risk for AF in the Absence of Antecedent or Concurrent Diagnosis of CHF or CHF or Myocardial Infarction

Index Age, y	Men	Women
Lifetime risk for AF without antecedent or concurrent CHF		
40	20.5	17.0
50	20.5	17.3
60	20.3	17.4
70	19.1	17.0
80	17.6	15.9
Lifetime risk for AF without antecedent or concurrent CHF or myocardial infarction		
40	16.3	15.6
50	16.6	15.9
60	16.8	16.1
70	16.5	15.9
80	16.0	14.8

All values are percentages.

Circulation 2004, 110:1042-1046

Incidence of atrial fibrillation in whites and African-Americans: The Atherosclerosis Risk in Communities (ARIC) study

Alvaro Alonso, MD, PhD,[a] Sunil K. Agarwal, MD, MPH,[b] Elsayed Z. Soliman, MD, MSc, MS,[c] Marietta Ambrose, MD,[d] Alanna M. Chamberlain, MPH,[a] Ronald J. Prineas, MD, PhD,[c] and Aaron R. Folsom, MD, MPH[a] *Minneapolis, MN; Chapel Hill, Winston-Salem, NC; and Baltimore, MD*

- 15.792 olgu
- Başlangıçta 45-65 yaş
- Yaklaşık 17 yıl izlem

Am Heart J 2009;158:111-7

Table III. Race-, sex- and age-specific incidence (per 1,000 person-years) of AF, ARIC, 1987 to 2004

	Whites						African-Americans					
	Women			Men			Women			Men		
Age (y)	AF cases	Person-years	Incidence*	AF cases	Person-years	Incidence*	AF cases	Person-years	Incidence*	AF cases	Person-years	Incidence*
45-49	0	5055	0	5	3600	1.4	1	2534	0.4	1	1478	0.7
50-54	9	12976	0.7	23	10040	2.3	3	6135	0.5	3	3446	0.9
55-59	34	20180	1.7	60	16373	3.7	11	8926	1.2	7	4939	1.4
60-64	76	23298	3.3	118	20213	5.8	24	9436	2.5	22	5382	4.1
65-69	106	17364	6.1	140	15823	8.8	27	6365	4.2	22	3820	5.8
70-74	90	9632	9.3	108	8748	12.3	34	3244	10.5	21	1924	10.9
75-79	50	3232	15.5	61	2900	21.0	11	987	11.1	7	642	10.9
80+	4	121	33.1	5	105	47.5	1	34	29.3	1	24	41.1
Total	369	91858	4.0	520	77802	6.7	112	37661	3.0	84	21655	3.9

* AF cases per 1,000 person-years of follow-up.

Am Heart J 2009;158:111-7

Türk halkında kronik atriyal fibrilasyon insidansı, prevalansı ve mortalitesine ilişkin tahminler

Incidence, prevalence, and mortality estimates for chronic atrial fibrillation in Turkish adults

Dr. Hüseyin Uyarel,[1] Dr. Altan Onat,[2,3] Dr. Hüsniye Yüksel,[3] Dr. Günay Can,[3]
Dr. Serkan Ordu,[4] Dr. Dursun Dursunoğlu[5]

Tablo 2. Yaş ve cinsiyete göre atriyal fibrilasyon (AF) prevalansı (n=3450)

	Tüm			Erkek			Kadın		
Yaş grupları	Sayı	AF	Oran (%)	Sayı	AF	Oran (%)	Sayı	AF	Oran (%)
32-59	1961	9	0.46	969	3	0.31	992	6	0.60
60-69	767	16	2.09	365	6	1.64	402	10	2.49
≥70	722	18	2.49	373	7	1.88	349	11	3.15
Tüm	3450	43	1.25	1707	16	0.94	1743	27	1.55

Tablo 3. Atriyal fibrilasyonun yaş grubu ve cinsiyete göre 1000 kişi-yılı başına insidansı

	Tüm		Erkek		Kadın	
Yaş grupları	Olgu / kişi-yılı	Oran (%)	Olgu / kişi-yılı	Oran (%)	Olgu / kişi-yılı	Oran (%)
32-59	6 / 19 380	0.31	2 / 9 578	0.21	4 / 9805	0.41
60-69	15 / 7 584	1.98	7 / 3608	1.94	8 / 3973	2.01
≥70	25 / 7 136	3.50	12 / 3686	3.26	13 / 3450	3.77
Tüm	46 / 34 100	1.35	21 / 16 872	1.24	25 / 17 228	1.45

Turk Kardiyol Dern Arş 2008;36(4):214-222

AF prevalansı yıllar içinde artış göstermektedir

- Yaşlanma etkisinden bağımsız
  - 1968 ile 1989 arasında, yaşla-düzeltilmiş AF prevalansı artmıştır (1)
  - 1994 ile 1998 arasında yaşla-düzeltilmiş AF prevalansı erkeklerde % 22, kadınlarda % 14 oranında artmıştır (2)

1. Wolf PA et al. Am Heart J 1996;131:790
2. Majeed A et al. Heart 2001;86:284

Secular Trends in Incidence of Atrial Fibrillation in Olmsted County, Minnesota, 1980 to 2000, and Implications on the Projections for Future Prevalence

Yoko Miyasaka, MD, PhD; Marion E. Barnes, MSc; Bernard J. Gersh, MB, ChB, DPhil; Stephen S. Cha, MS; Kent R. Bailey, PhD; Walter P. Abhayaratna, MBBS; James B. Seward, MD; Teresa S.M. Tsang, MD

Background—Limited data exist on trends in incidence of atrial fibrillation (AF). We assessed the community-based trends in AF incidence for 1980 to 2000 and provided prevalence projections to 2050.

Methods and Results—The adult residents of Olmsted County, Minnesota, who had ECG-confirmed first AF in the period 1980 to 2000 (n=4618) were identified. Trends in age-adjusted incidence were determined and used to construct model-based prevalence estimates. The age- and sex-adjusted incidence of AF per 1000 person-years was 3.04 (95% CI, 2.78 to 3.31) in 1980 and 3.68 (95% CI, 3.42 to 3.95) in 2000. According to Poisson regression with adjustment for age and sex, incidence of AF increased significantly (P=0.014), with a relative increase of 12.6% (95% CI, 2.1 to 23.1) over 21 years. The increase in age-adjusted AF incidence did not differ between men and women (P=0.84). According to the US population projections by the US Census Bureau, the number of persons with AF is projected to be 12.1 million by 2050, assuming no further increase in age-adjusted incidence of AF, but 15.9 million if the increase in incidence continues.

Conclusions—The age-adjusted incidence of AF increased significantly in Olmsted County during 1980 to 2000. Whether or not this rate of increase continues, the projected number of persons with AF for the United States will exceed 10 million by 2050, underscoring the urgent need for primary prevention strategies against AF development. (***Circulation*. 2006;114:119-125.**)

AF sıklığındaki artmanın nedenleri ?

- Obezite ?
- Metabolik sendrom ?

AF : Risk faktörleri

- Yaş
- Erkek cinsiyet
- KAH
  - MI öyküsü
- Hipertansiyon
  - En sık neden
- Diabetes mellitus
- Post-op dönem
  - Özellikle kalp cerrahisi
- Hipertiroidi
- Kapak hastalığı
- Kalp yetmezliği
- Kardiyomiyopatiler
- Sistolik LV disfonksiyonu

Type 2 diabetes, glucose homeostasis and incident atrial fibrillation: the Atherosclerosis Risk in Communities study

Rachel R Huxley,[1] Alvaro Alonso,[1] Faye L Lopez,[1] Kristian B Filion,[1] Sunil K Agarwal,[2] Laura R Loehr,[2] Elsayed Z Soliman,[3] James S Pankow,[1] Elizabeth Selvin[4]

Conclusions Diabetes, HbA1c level and poor glycaemic control are independently associated with an increased risk of AF, but the underlying mechanisms governing the relationship are unknown and warrant further investigation.

Heart 2012;98:133-138

Metabolic syndrome and incidence of atrial fibrillation among blacks and whites in the Atherosclerosis Risk in Communities (ARIC) Study

Alanna M. Chamberlain, PhD, MPH,[a] Sunil K. Agarwal, MD, MPH,[b] Marietta Ambrose, MD,[c] Aaron R. Folsom, MD, MPH,[a] Elsayed Z. Soliman, MD, MSc, MS,[d] and Alvaro Alonso, MD, PhD[a,c] *Minneapolis, MN; Chapel Hill and Winston-Salem, NC; Baltimore, MD; and Pamplona, Spain*

Conclusion In this large cohort, the MetSyn and most of its components were associated with a higher risk of AF in both blacks and whites. Given the high prevalence of the MetSyn, strategies to prevent its development or to control individual components may reduce the burden of AF. (Am Heart J 2010;159:850-6.)

Am Heart J 2010;159:850-6

Absolute and Attributable Risks of Atrial Fibrillation in Relation to Optimal and Borderline Risk Factors

The Atherosclerosis Risk in Communities (ARIC) Study

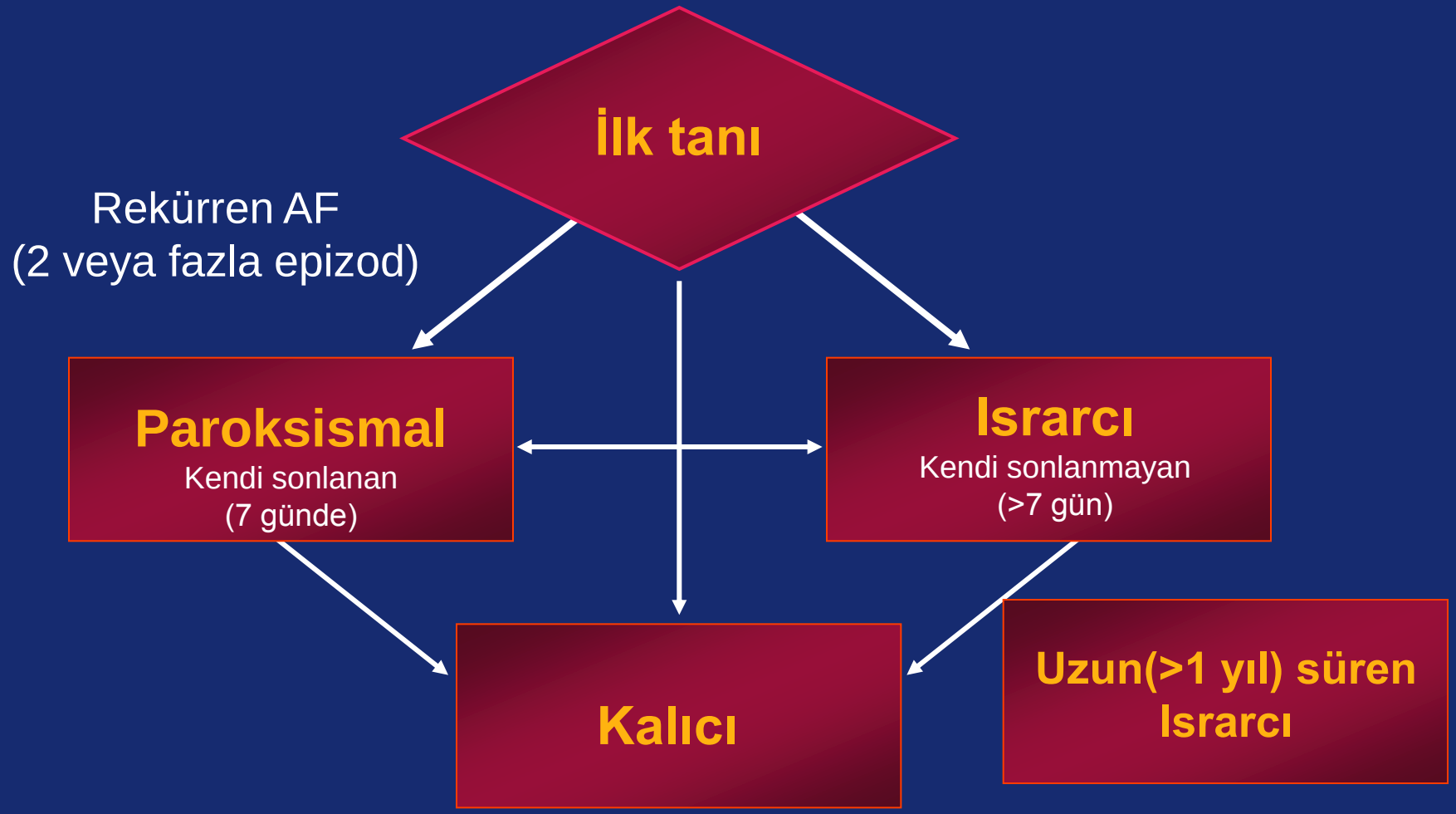
Rachel R. Huxley, DPhil; Faye L. Lopez, MPH; Aaron R. Folsom, MD, MPH;
Sunil K. Agarwal, MD, MPH, PhD; Laura R. Loehr, MD, MS, PhD;
Elsayed Z. Soliman, MD, MSc, MS; Rich Maclehose, PhD;
Suma Konety, MD, MS; Alvaro Alonso, MD, PhD

Background—Atrial fibrillation (AF) is an important risk factor for stroke and overall mortality, but information about the preventable burden of AF is lacking. The aim of this study was to determine what proportion of the burden of AF in blacks and whites could theoretically be avoided by the maintenance of an optimal risk profile.

Methods and Results—This study included 14 598 middle-aged Atherosclerosis Risk in Communities (ARIC) Study cohort members. Previously established AF risk factors, namely high blood pressure, elevated body mass index, diabetes mellitus, cigarette smoking, and prior cardiac disease, were categorized into optimal, borderline, and elevated levels. On the basis of their risk factor levels, individuals were classified into 1 of these 3 groups. The population-attributable fraction of AF resulting from having a nonoptimal risk profile was estimated separately for black and white men and women. During a mean follow-up of 17.1 years, 1520 cases of incident AF were identified. The age-adjusted incidence rates were highest in white men and lowest in black women (7.45 and 3.67 per 1000 person-years, respectively). The overall prevalence of an optimal risk profile was 5.4% but varied according to race and gender: 10% in white women versus 1.6% in black men. Overall, 56.5% of AF cases could be explained by having ≥1 borderline or elevated risk factors, of which elevated blood pressure was the most important contributor.

Conclusion—As with other forms of cardiovascular disease, more than half of the AF burden is potentially avoidable through the optimization of cardiovascular risk factors levels. (***Circulation***. **2011;123:1501-1508.**)

AF – klinik sınıflandırma



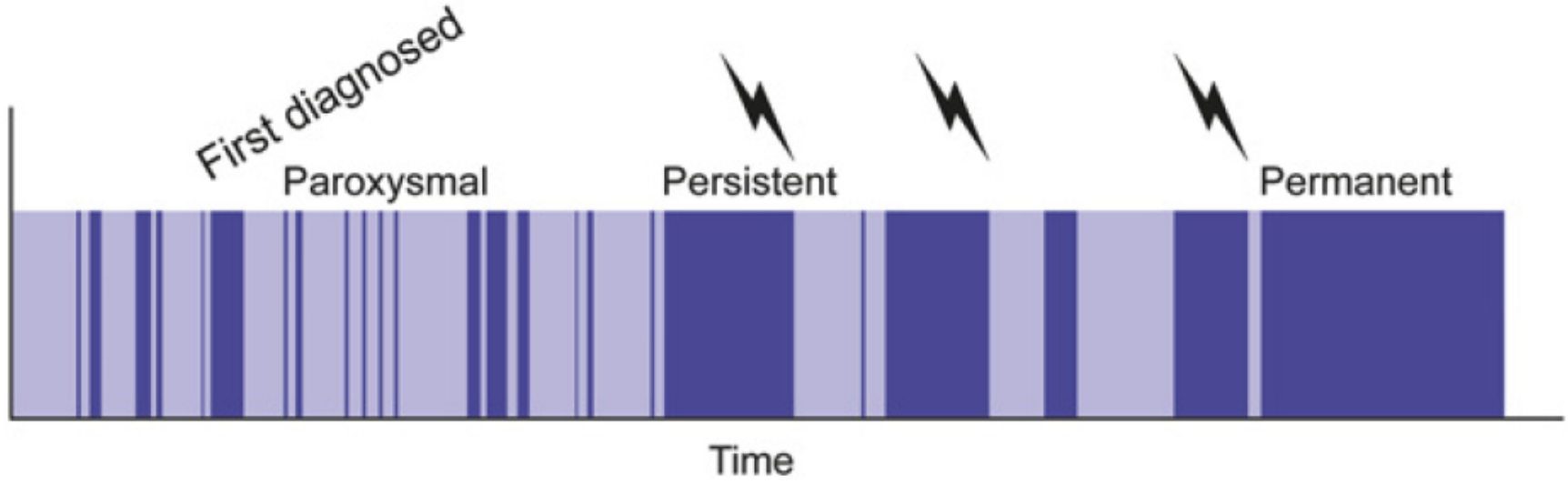


Figure 1 Natural time course of atrial fibrillation (AF), showing a typical chaotic pattern of time in AF (dark blue) and time in sinus rhythm (light blue). AF progresses from undiagnosed to first diagnosed, paroxysmal, persistent, to permanent. Flashes indicate cardioversions as examples for therapeutic interventions that influence the 'natural' time course of the arrhythmia. Adapted with permission from Kirchhof *et al*.[4]

AF – doğal seyir

- AF ne kadar uzun sürerse, NSR sağlamak ve korumak o kadar zor

- Progresyon sık
  - İlk tanı sonrası birinci yılda nüks oranı % 10
  - Daha sonra yılda % 5
  - Paroksismal vasıfta uzun yıllar kalma oranı çok az

Progression From Paroxysmal to Persistent Atrial Fibrillation

Clinical Correlates and Prognosis

Cees B. de Vos, MD, Ron Pisters, MD, Robby Nieuwlaat, PhD, Martin H. Prins, MD, PhD, Robert G. Tieleman, MD, PhD, Robert-Jan S. Coelen, BSc, Antonius C. van den Heijkant, BSc, Maurits A. Allessie, MD, PhD, Harry J. G. M. Crijns, MD, PhD

- Euro Heart Survey hastaları
- 1219 PAF'lu olgu
- 1 yıl takipte AF progresyonu
- HATCH skoru
  - History of heart failure
  - Age>75
  - TIA or stroke history
  - Chronic obstructive pulmonary disease
  - Hypertension

J Am Coll Cardiol 2010;55:725–31

Table 4 Independent Predictors of AF Progression Resulting From Multivariate Logistic Regression Analysis

	OR	95% CI	Regression Coefficient	p Value	Score
History of heart failure	2.22	1.54–3.22	0.80	<0.001	2
Hypertension	1.52	1.05–2.20	0.42	0.024	1
Chronic obstructive pulmonary disease	1.51	0.95–2.39	0.41	0.088	1
History of stroke or TIA	2.02	1.24–3.31	0.71	0.007	2
Age >75 yrs	1.57	1.07–2.30	0.45	0.024	1

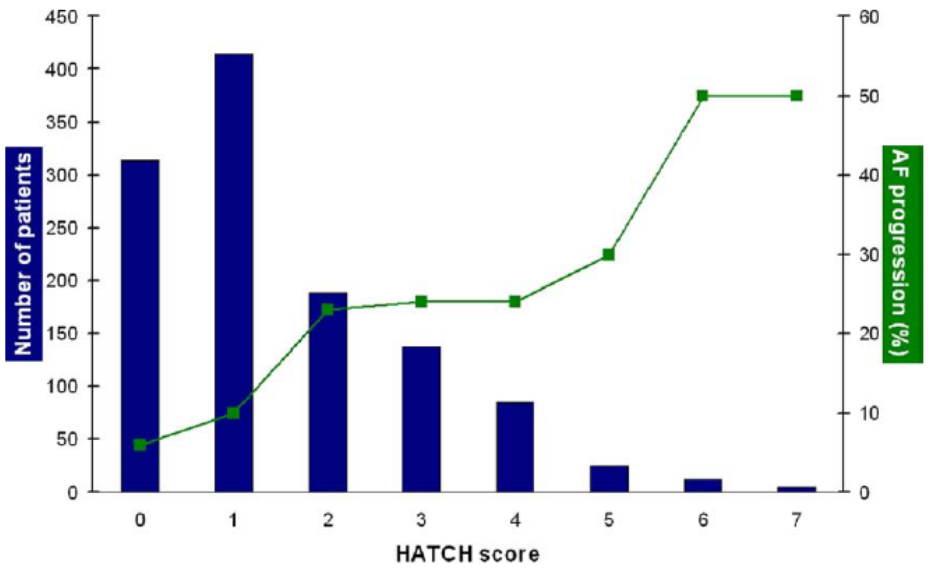


Figure 1 Prevalence of the Different HATCH Scores and Incidence of Progression

The number of patients for each HATCH score is represented by the **blue bars**. The percentage of atrial fibrillation (AF) progression after 1 year of follow-up per HATCH score is represented by the **green line**.

J Am Coll Cardiol 2010;55:725–31

Europace (2008) 10, 21–27
doi:10.1093/europace/eum276

EUROPEAN SOCIETY OF CARDIOLOGY®

POSITION PAPER

Delayed rhythm control of atrial fibrillation may be a cause of failure to prevent recurrences: reasons for change to active antiarrhythmic treatment at the time of the first detected episode

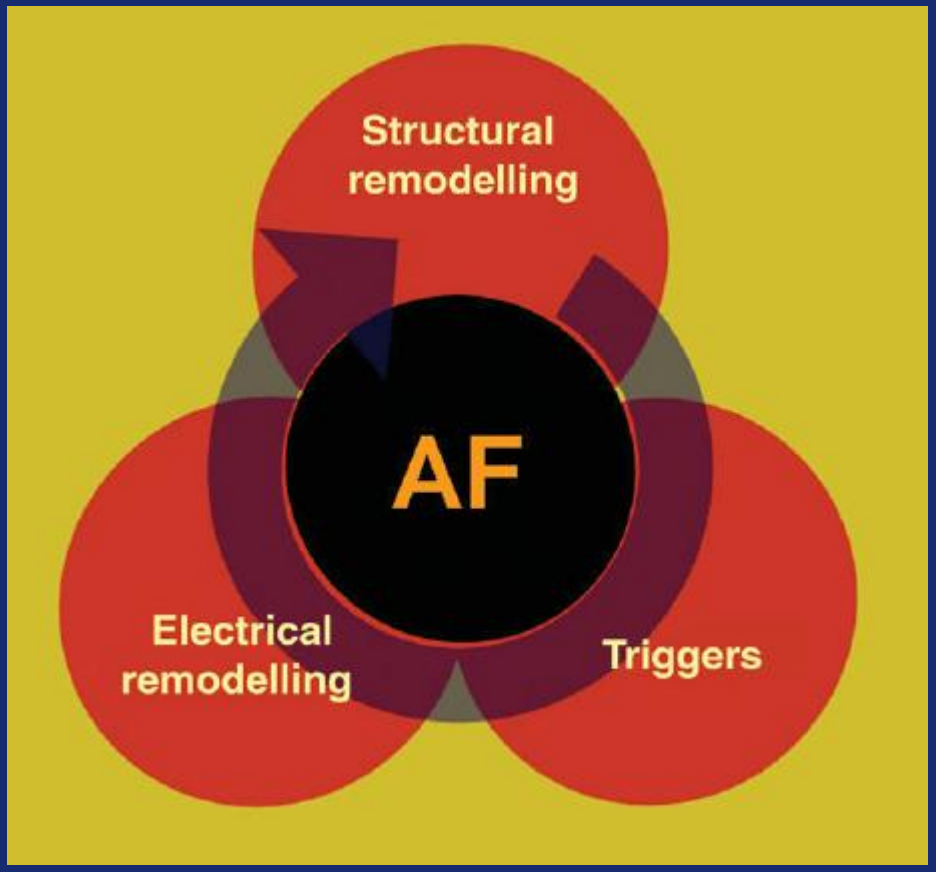
Francisco G. Cosio[1]*, Etienne Aliot[2], Giovanni Luca Botto[3], Hein Heidbüchel[4], Christoph Johan Geller[5], Paulus Kirchhof[6], Jean-Claude De Haro[7], Robert Frank[8], Julian Perez Villacastin[9], Johan Vijgen[10], and Harry Crijns[11]

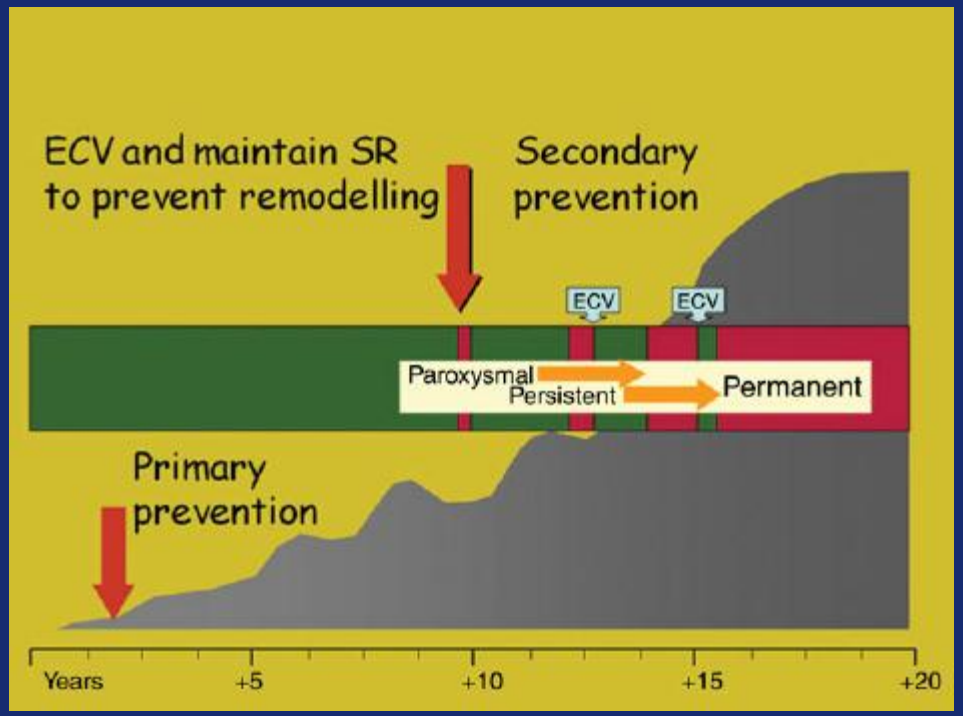
[1]*Hospital Universitario de Getafe, Carretera de Toledo, km 12,5 Getafe, 28905 Madrid, Spain;* [2]*Hôpital de Brabois, Nancy, France;* [3]*Sant'Anna Hospital, Como, Italy;* [4]*University Hospital Gasthuisberg, Leuven, Belgium;* [5]*Zentralklinik Bad Berka, Germany;* [6]*Kompetenznetz Vorhofflimmern und Medizinische Klinik und Poliklinik C, Kardiologie und Angiologie, Muenster, Germany;* [7]*Hôpital de La timone, Marseille, France;* [8]*Hôpital Pitie Salpetriere, Paris, France;* [9]*University Hospital San Carlos, Madrid, Spain;* [10]*Virga Jesse Hospital, Hasselt, Belgium; and* [11]*University Hospital Maastricht, The Netherlands*

Received 21 October 2007; accepted after revision 21 November 2007; online publish-ahead-of-print 17 December 2007

KEYWORDS
First-detected atrial fibrillation;
Antiarrhythmic;
Angiotensin;
Atrial remodelling

Atrial fibrillation (AF) is associated with impaired functional capacity and quality of life and significant morbidity and mortality. The current management approach fails to maintain stable sinus rhythm (SR) in the majority of patients. For many years, guidelines have recommended antiarrhythmic treatment of a first AF episode only if the AF is poorly tolerated, a position that has been reinforced by studies showing no mortality or morbidity advantage of rhythm control over rate control. During the last decade, research has shown mechanisms of self-perpetuation of AF based on electrophysiological and structural remodelling induced by AF itself. There is mounting evidence that '*lone*' AF is because of a host of factors, some of which may be easily treatable, such as hypertension, sleep apnoea, and obesity, thus allowing secondary prevention at the time of the first episode of AF. According to these concepts, lack of early intervention could be one of the reasons for long-term failure of maintenance of SR. In this position paper, we propose testing the working hypothesis that if an SR maintenance strategy is selected, treatment of AF should commence at the first-detected episode and should be based on a double strategy of SR restoration and aggressive treatment of associated conditions that promote atrial remodelling.


Structural remodelling
AF
Electrical remodelling
Triggers


ECV and maintain SR to prevent remodelling
Secondary prevention
ECV
ECV
Paroxysmal
Persistent
Permanent
Primary prevention
Years
+5
+10
+15
+20