



Was bietet die Elektrophysiologie 2012? „Neues und Bewährtes“

Fikret Er

Medikamentöse Entwicklung

Nichtmedikamentöse Entwicklung

Vorhofflimmern

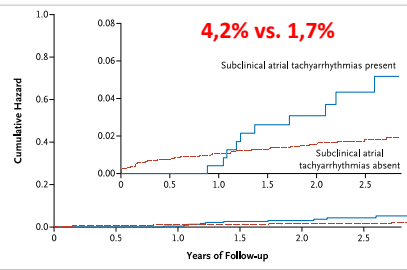
THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Subclinical Atrial Fibrillation and the Risk of Stroke

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 Christophe Bailleul, M.D., Carlos A. Morillo, M.D., Mark Carlson, M.D.,
 Ellison Thelemes, M.Sc., Elizabeth S. Kaufman, M.D.,
 and Stefan H. Hohnloser, M.D., for the ASSERT Investigators*

Clinical Outcome	Subclinical Atrial Tachyarrhythmias between Enrollment and 3 Months				Hazard Ratio with Subclinical Atrial Tachyarrhythmias (95% CI)		P Value
	Present (N=261)		Absent (N=2319)				
	no. of events	%/yr	no. of events	%/yr			
Ischemic stroke or systemic embolism*	11	1.69	40	0.69	2.49 (1.28-4.85)	0.007	
Ischemic stroke	10	1.54	36	0.62	2.52 (1.25-5.08)	0.01	
Systemic embolism	1	0.15	4	0.07	2.24 (0.25-20.10)	0.47	
Myocardial infarction	7	1.07	39	0.67	1.52 (0.68-3.42)	0.31	
Death from vascular causes	19	2.92	153	2.62	1.11 (0.69-1.79)	0.67	
Stroke, myocardial infarction, or death from vascular causes	29	4.45	206	3.53	1.25 (0.85-1.84)	0.27	
Hospitalization for heart failure	20	3.07	131	2.24	1.36 (0.85-2.19)	0.20	
Clinical atrial fibrillation or flutter on surface electrocardiogram	41	6.29	71	1.22	5.56 (3.78-8.17)	<0.001	



Healey et al, N Engl J Med 2012; 366: 120-6

Orale Antikoagulation

RELY Studie												
Event	Dabigatran, 110 mg (N=6015)		Dabigatran, 150 mg (N=6076)		Warfarin (N=6022)		Dabigatran, 110 mg, vs. Warfarin		Dabigatran, 150 mg, vs. Warfarin		Dabigatran, 150 mg vs. 110 mg	
	no. of patients	%/yr	no. of patients	%/yr	no. of patients	%/yr	Relative Risk (95% CI)	P Value	Relative Risk (95% CI)	P Value	Relative Risk (95% CI)	P Value
Stroke or systemic embolism*	182	1.53	134	1.11	199	1.69	0.91 (0.74–1.11)	<0.001 for noninferiority, 0.34	0.66 (0.53–0.82)	<0.001 for noninferiority, <0.001	0.73 (0.58–0.91)	0.005
Stroke												
Hemorrhagic	14	0.12	12	0.10	45	0.38	0.92 (0.74–1.13)	0.41	0.64 (0.51–0.81)	<0.001	0.70 (0.56–0.89)	0.003
Ischemic or unspecified	159	1.34	111	0.92	142	1.20	0.31 (0.17–0.56)	<0.001	0.26 (0.14–0.49)	<0.001	0.85 (0.39–1.83)	0.67
Nondisabling stroke	60	0.50	44	0.37	69	0.58	1.11 (0.89–1.40)	0.35	0.76 (0.60–0.98)	0.03	0.69 (0.54–0.88)	0.002
Disabling or fatal stroke	112	0.94	80	0.66	118	1.00	0.86 (0.61–1.22)	0.40	0.62 (0.43–0.91)	0.01	0.72 (0.49–1.07)	0.10
Myocardial infarction	86	0.72	89	0.74	63	0.53	0.94 (0.73–1.22)	0.65	0.66 (0.50–0.88)	0.005	0.70 (0.53–0.94)	0.02
Pulmonary embolism	14	0.12	18	0.15	11	0.09	1.35 (0.98–1.87)	0.07	1.38 (1.00–1.91)	0.048	1.02 (0.76–1.38)	0.88
Hospitalization	2311	19.4	2430	20.2	2458	20.8	1.26 (0.57–2.78)	0.56	1.61 (0.76–3.42)	0.21	1.27 (0.63–2.56)	0.50
Death from vascular causes	289	2.43	274	2.28	317	2.69	0.92 (0.87–0.97)	0.003	0.97 (0.92–1.03)	0.34	1.06 (1.00–1.12)	0.04
Death from any cause	446	3.75	438	3.64	487	4.13	0.90 (0.77–1.06)	0.21	0.85 (0.72–0.99)	0.04	0.94 (0.79–1.11)	0.44
Major bleeding	322	2.71	375	3.11	397	3.36	0.91 (0.80–1.03)	0.13	0.88 (0.77–1.00)	0.051	0.97 (0.85–1.11)	0.66
Life threatening	145	1.22	175	1.45	212	1.80	0.80 (0.69–0.93)	0.003	0.93 (0.81–1.07)	0.31	1.16 (1.00–1.34)	0.052
Non-life threatening	198	1.66	226	1.88	208	1.76	0.68 (0.55–0.83)	<0.001	0.81 (0.66–0.99)	0.04	1.19 (0.96–1.49)	0.11
Gastrointestinal†	133	1.12	182	1.51	120	1.02	0.94 (0.78–1.15)	0.56	1.07 (0.89–1.29)	0.47	1.14 (0.95–1.39)	0.17
Minor bleeding	1566	13.16	1787	14.84	1931	16.37	1.10 (0.88–1.41)	0.43	1.50 (1.19–1.89)	<0.001	1.36 (1.06–1.70)	0.007

Conolly et al., N Engl J Med 2009, 361: 1139-51

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 SEPTEMBER 8, 2011 VOL. 365 NO. 10

Rivaroxaban versus Warfarin in Nonvalvular Atrial Fibrillation

Study Population	Rivaroxaban			Warfarin			Hazard Ratio (95% CI) [†]	P Value	
	No. of Patients	No. of Events	Event Rate no./100 patient-yr	No. of Patients	No. of Events	Event Rate no./100 patient-yr		Noninferiority	Superiority
Per-protocol, as-treated population [‡]	6958	188	1.7	7004	241	2.2	0.79 (0.66–0.96)	<0.001	
Safety, as-treated population	7061	189	1.7	7082	243	2.2	0.79 (0.65–0.95)		0.02
Intention-to-treat population [§]	7081	269	2.1	7090	306	2.4	0.88 (0.75–1.03)	<0.001	0.12
During treatment		188	1.7		240	2.2	0.79 (0.66–0.96)		0.02
After discontinuation		81	4.7		66	4.3	1.10 (0.79–1.52)		0.58

Patel et al., N Engl J Med 2011, 365: 883-91

Rocket AF
Rivaroxaban Once Daily Oral Direct Factor Xa Inhibition Compared with Vitamin K Antagonism for Prevention of Stroke and Embolism Trial in Atrial Fibrillation

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 SEPTEMBER 15, 2011 VOL. 365 NO. 11

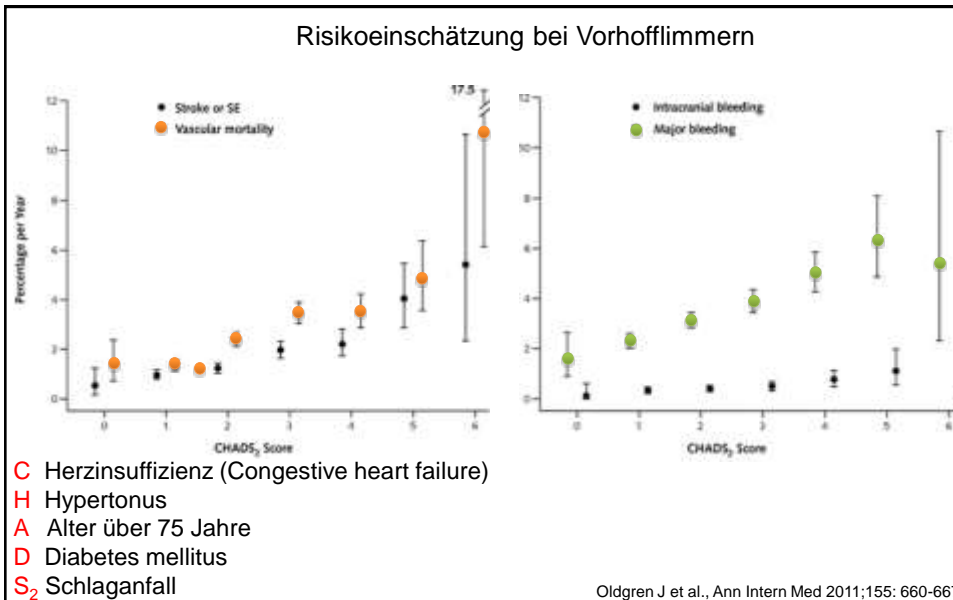
Apixaban versus Warfarin in Patients with Atrial Fibrillation

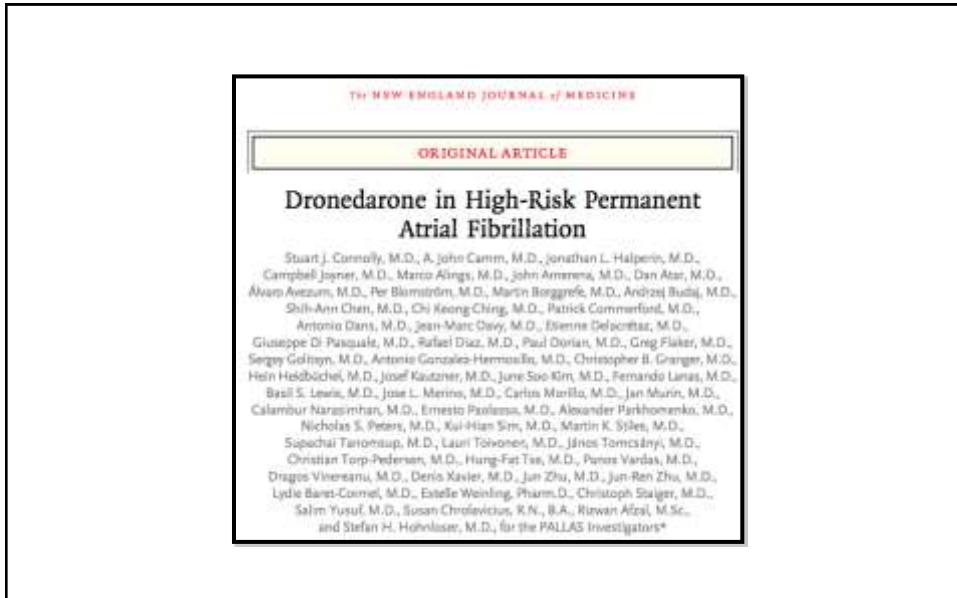
Outcome	Apixaban Group (N=9120)		Warfarin Group (N=9081)		Hazard Ratio (95% CI)	P Value
	Patients with Event no.	Event Rate %/yr	Patients with Event no.	Event Rate %/yr		
Primary outcome: stroke or systemic embolism	212	1.27	265	1.60	0.79 (0.66–0.95)	0.01
Stroke	199	1.19	250	1.51	0.79 (0.65–0.95)	0.01
Ischemic or uncertain type of stroke	162	0.97	175	1.05	0.92 (0.74–1.13)	0.42
Hemorrhagic stroke	40	0.24	78	0.47	0.51 (0.35–0.75)	<0.001
Systemic embolism	15	0.09	17	0.10	0.87 (0.44–1.75)	0.70
Key secondary efficacy outcome: death from any cause	603	3.52	669	3.94	0.89 (0.80–0.998)	0.047
Other secondary outcomes						
Stroke, systemic embolism, or death from any cause	752	4.49	837	5.04	0.89 (0.81–0.98)	0.02
Myocardial infarction	90	0.53	102	0.61	0.88 (0.66–1.17)	0.37
Stroke, systemic embolism, myocardial infarction, or death from any cause	810	4.85	906	5.49	0.88 (0.80–0.97)	0.01
Pulmonary embolism or deep-vein thrombosis	7	0.04	9	0.05	0.78 (0.29–2.10)	0.63
Primary safety outcome: ISTH major bleeding [†]	327	2.13	462	3.09	0.69 (0.60–0.80)	<0.001
Intracranial	52	0.33	122	0.80	0.42 (0.30–0.58)	<0.001
Other location	275	1.79	340	2.27	0.79 (0.68–0.93)	0.004
Gastrointestinal	105	0.76	119	0.86	0.89 (0.70–1.15)	0.37

Granger et al., N Engl J Med 2011, 365: 981-92

	Warfarin	Dabigatran	Rivaroxaban	Apixaban
Administration	Once a day	Twice a day	Once a day	Twice a day
Target	Vitamin K-dependent factors	Factor II	Factor Xa	Factor Xa
Time to peak effect	3–5 d	1 h	2,5–4 h	3 h
Dose	Variable	150 mg twice a day and 110 mg twice a day	20 mg every day (15 mg every day for renal impairment)	5 mg twice a day (2.5 mg twice a day for high risk)
Half-life	40 h	12–14 h	7–11 h	12 h
Interactions	Multiple	Inhibitors of P-glycoprotein transporter*	Inhibitors of CYP 3A4 and P-glycoprotein transporter†	Inhibitors of CYP 3A4 and P-glycoprotein transporter†
Renal clearance, %	0	80	35	25
Anticoagulation monitoring	Required	Not required	Not required	Not required
Antidote	Vitamin K	None	None	None

Granger et Armaganijan, Circulation 2012, 125: 159-164





<p>Studienpopulation</p> <p>Patienten mit chronischem Vorhofflimmern 65 Jahre und älter</p> <p>Mindestens 1 Risikofaktor:</p> <ol style="list-style-type: none"> 1) Koronare Herzerkrankung 2) Schlaganfall 3) Symptomatische Herzinsuffizienz 4) Linksventrikuläre Ejektionsfraktion <40% 5) Peripher arterielle Verschlusskrankheit 6) Alter >75 Jahre mit Hypertonus und Diabetes mellitus 	<p>Zwei primäre Endpunkte:</p> <ul style="list-style-type: none"> • Erster Schlaganfall, systemisch arterielle Embolie, Myokardinfarkt oder kardiovaskuläre Sterblichkeit • Erste kardiovaskuläre Hospitalisierung oder Gesamtsterblichkeit
<p>Kalkulierte Studienteilnehmer: 10.800 Patienten</p>	

Characteristic	Dronedarone (N=1619)	Placebo (N=1617)
Age		
Mean — yr	75.0±5.9	75.0±5.9
65 to <75 yr — no. (%)	783 (48.4)	779 (48.2)
≥75 yr — no. (%)	836 (51.6)	838 (51.8)
Male sex — no. (%)	1051 (64.9)	1040 (64.3)
Heart rate — bpm	77±16	78±16
Systolic blood pressure — mm Hg	133±17	133±17
Inclusion risk criteria — no. (%)		
Coronary artery disease	661 (40.8)	666 (41.2)
Symptomatic heart failure†	233 (14.4)	240 (14.8)
Left ventricular ejection fraction ≤40%	345 (21.3)	335 (20.7)
Previous stroke or transient ischemic attack	436 (26.9)	458 (28.3)
Peripheral arterial disease	187 (11.6)	213 (13.2)
Age ≥75 yr plus hypertension and diabetes	294 (18.2)	276 (17.1)
CHADS₂ score‡		
Mean	2.8±1.2	2.9±1.2
≥2 — no. (%)	1427 (88.1)	1444 (89.3)
Duration of permanent atrial fibrillation >2 yr — no. (%)	1119 (69.1)	1124 (69.5)
Heart failure — no. (%)		
No history	512 (31.6)	535 (33.1)
New York Heart Association class I	234 (14.5)	209 (12.9)
New York Heart Association class II	732 (45.2)	749 (46.3)
New York Heart Association class III	141 (8.7)	124 (7.7)
Other risk factors		
Previous myocardial infarction	392 (24.2)	420 (26.0)
Prior coronary-artery bypass grafting	236 (14.6)	206 (12.7)
Permanent pacemaker	229 (14.1)	218 (13.5)
Hypertension	1352 (83.5)	1385 (85.7)
Diabetes mellitus	573 (35.4)	598 (37.0)

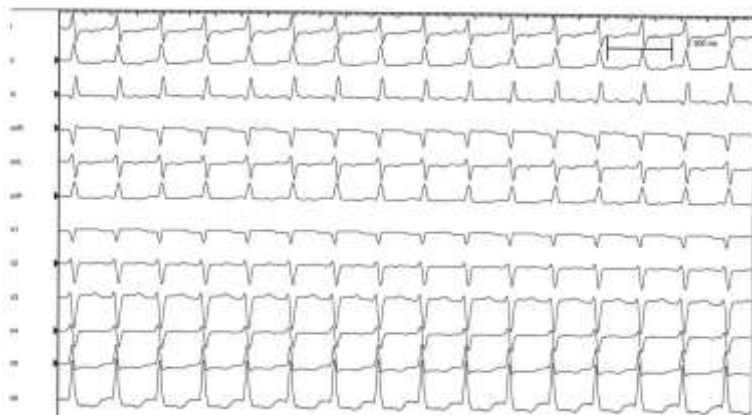
Outcome	Dronedarone		Placebo		Hazard Ratio (95% CI)†	P Value
	No. of Events	Rate/100 Patient-Yr	No. of Events	Rate/100 Patient-Yr		
First coprimary outcome	43	8.2	19	3.6	2.29 (1.34–3.94)	0.002
Second coprimary outcome	127	25.3	67	12.9	1.95 (1.45–2.62)	<0.001
Death						
From any cause	25	4.7	13	2.4	1.94 (0.99–3.79)	0.049
From cardiovascular causes	21	4.0	10	1.9	2.11 (1.00–4.49)	0.046
From arrhythmia	13	2.5	4	0.8	3.26 (1.06–10.0)	0.03

Klinische Elektrophysiologie

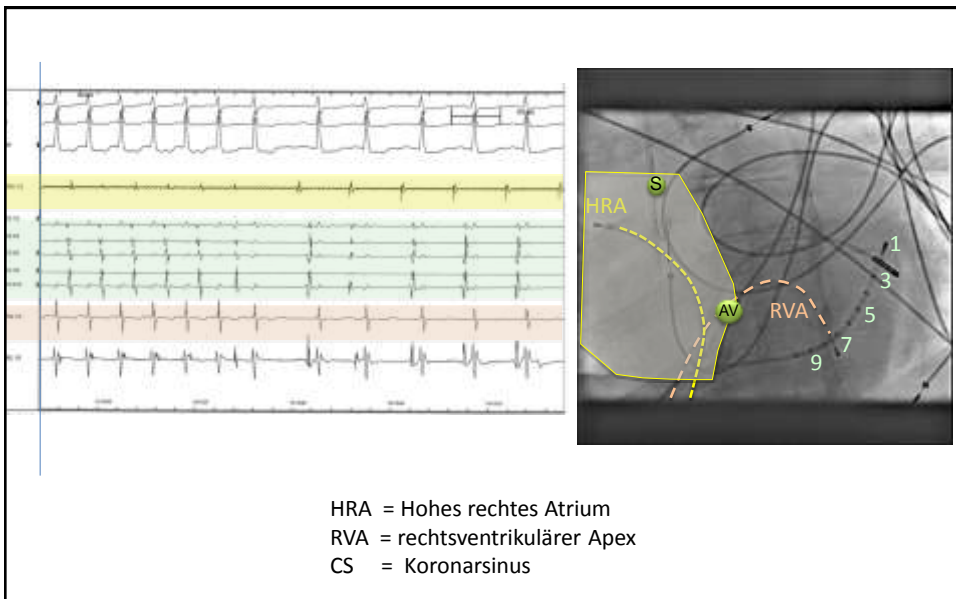
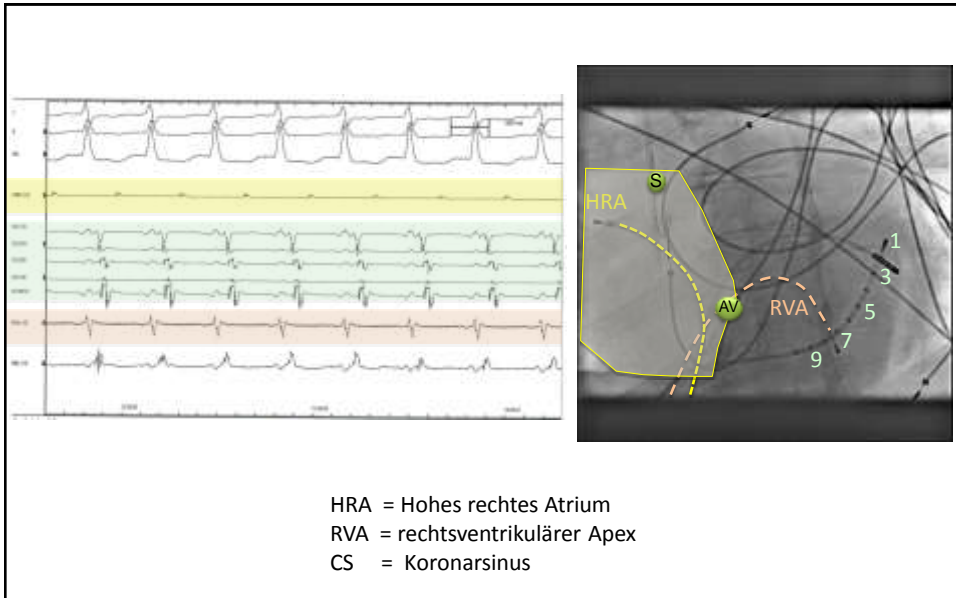
Rhythmologische Fallbeispiele

48-jährige Frau,
-seit 3 Wochen Herzrasen
-zuvor „Herzgesund“

-Aktuelle Dyspnoe NYHA III
-LVEF 44%



Herzfrequenz ca. 185/min



58 jähriger Patient

Herzinsuffizienz (DCM) NYHA III, latente Hyperthyreose

→ Seit einigen Wochen Minderung der Leistungsfähigkeit, Palpitationen

Aktuelle Medikation

Bisoprolol 10 mg
HCT 25 mg
Ramipril 5 mg
Torasemid 10 mg
Aldactone 25 mg

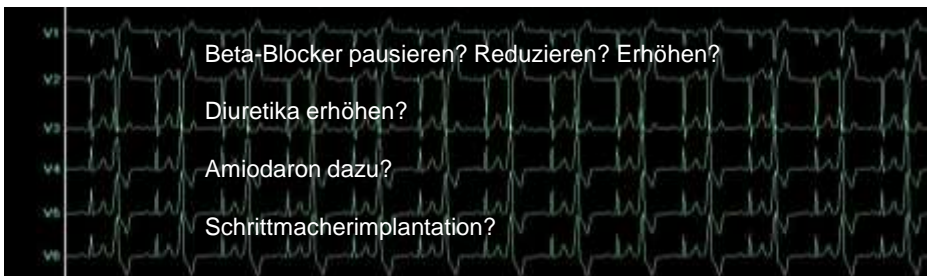
Klinische Untersuchung

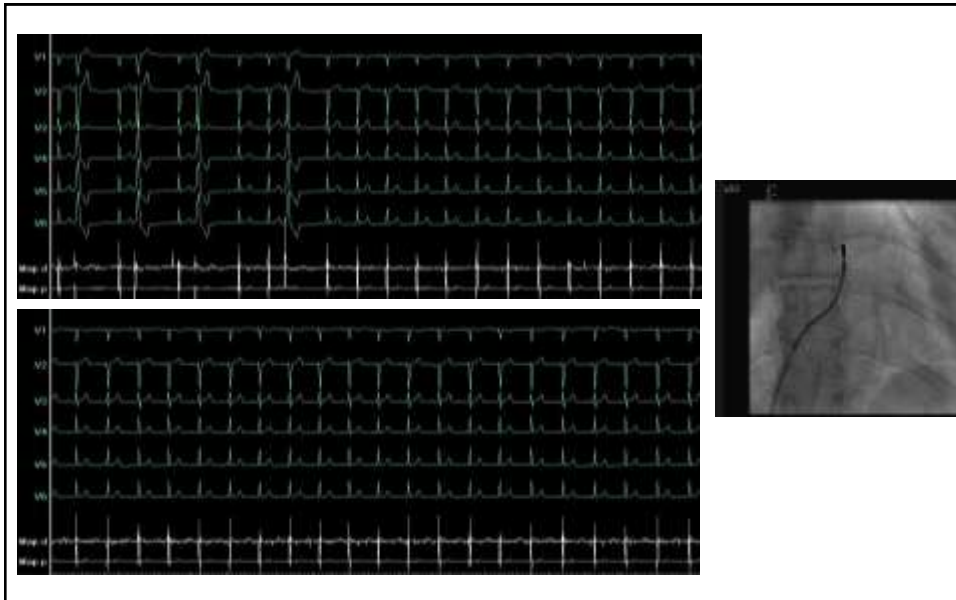
3. Herzton
Keine peripheren Ödeme
Blutdruck 100/60 mmHg
Puls 45/Minute

58 jähriger Patient

Herzinsuffizienz (DCM) NYHA III, latente Hyperthyreose

→ Seit einigen Wochen Minderung der Leistungsfähigkeit, Palpitationen





52 jähriger Patient, verheiratet, 3 Kinder
stellt sich in der rhythmologischen Ambulanz vor

Anamnese:
Leistenbruch-Operation vor einigen Jahren

Kardiovaskuläre Risikofaktoren:
Keine

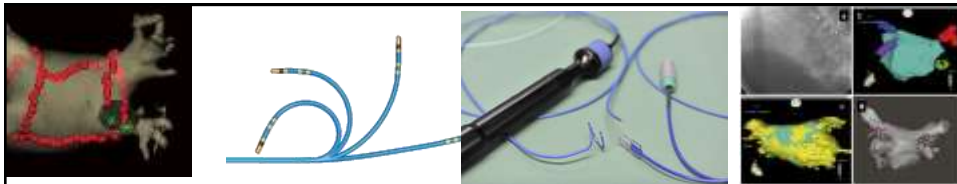
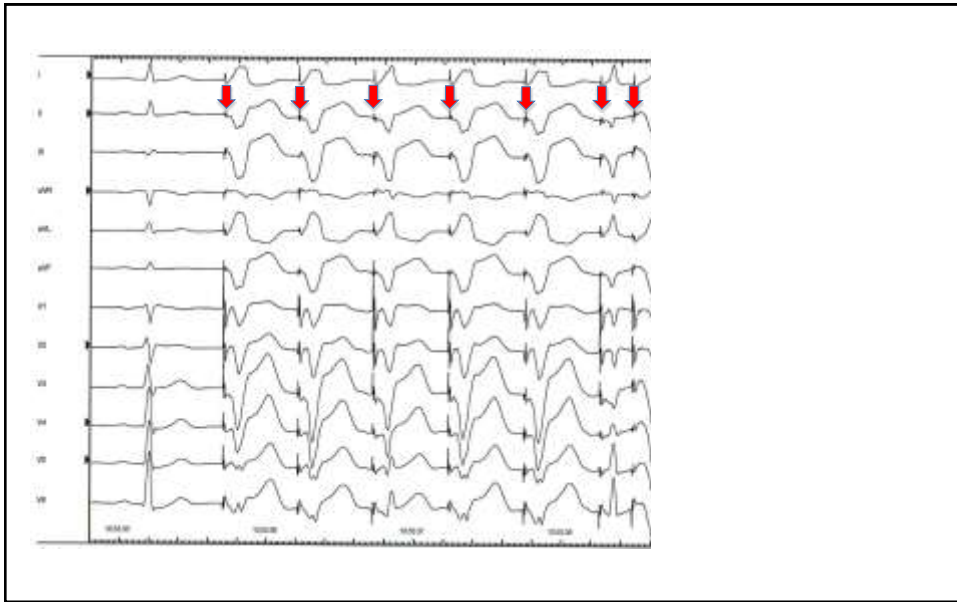
Aktuelle Beschwerden:
Keine

52 jähriger Patient, verheiratet, 3 Kinder
stellt sich in der rhythmologischen Ambulanz vor

- Vater mit 55 Jahren plötzlich verstorben
- Bruder mit 43 Jahren plötzlich verstorben
- Bruder mit 48 Jahren plötzlich verstorben
- Schwester mit 50 Jahren plötzlich verstorben

„Werde ich auch bald sterben?“





Modernes elektrophysiologisches Zentrum



<p><small>Journal of the American College of Cardiology © 2011 by the American College of Cardiology Foundation and the American Heart Association, Inc. Published by Elsevier Inc.</small></p>	<p><small>Vol. 58, No. 24, 2011 ISSN 0735-1097/836.00 doi:10.1016/j.jacc.2011.08.007</small></p>
PRACTICE GUIDELINE	
<h2 style="margin: 0;">2011 ACCF/AHA/SCAI Guideline for Percutaneous Coronary Intervention</h2> <p style="font-size: small; margin: 5px 0;">A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions</p>	
<div style="border: 2px solid red; background-color: yellow; padding: 10px; display: inline-block;"> <h1 style="margin: 0; color: green;">Heart Team Approach</h1> </div>	
PRACTICE GUIDELINE	
<h2 style="margin: 0;">2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery</h2> <p style="font-size: small; margin: 5px 0;">A Report of the American College of Cardiology Foundation/ American Heart Association Task Force on Practice Guidelines <i>Developed in Collaboration With the American Association for Thoracic Surgery, Society of Cardiovascular Anesthesiologists, and Society of Thoracic Surgeons</i></p>	
<p><small>© 2011 by the American College of Cardiology Foundation and the American Heart Association, Inc. Published by Elsevier Inc.</small></p>	<p><small>ISSN 0735-1097/836.00 doi:10.1016/j.jacc.2011.08.007</small></p>



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Rhythmologische Ambulanz
Rhythmologische Hotline **478-32353**

- Neue orale Antikoagulationen vielversprechend
- Dronedarone enttäuschend
- Anteil an unbemerktem Vorhofflimmern häufiger als gedacht
- Team-Entscheidungen in der Rhythmologie



Vielen Dank für Ihre Aufmerksamkeit!

Fikret Er