Cardiology News /Recent Literature Review / Second Quarter 2013

Antonis S. Manolis, MD, Effie Rouska, MD, Hector Anninos, MD / Evagelismos Hospital, Athens, Greece

ESC Congress will be held in Amsterdam, 31/8-4/9/13

HCS Meeting: Athens, 10-12/10/2013

TCT Meeting: San Francisco, 28/10-1/11/13

AHA 2013: Dallas, 16-20/11/13

ACC 2014: Washington, DC, 29-31/3/2014

Athens Cardiology Update 2014: Athens (Crown Plaza Hotel), 10-12/4/2014

HRS Meeting: San Francisco, 7-10/5/2014

EuroPCR: Paris, 20-23/5/2014

CardioStim 2014: Nice, 18-21/6/2014

ARMYDA-9 CAROTID: Clopidogrel Load & Atorvastatin Reload Prevent Ischemic Cerebral Events After Protected Carotid Stenting

A total of 156 patients undergoing protected carotid stenting were randomized to a 600-mg (n=78) or 300-mg (n=78) clopidogrel load given 6 h before intervention and either an atorvastatin reload (n=76; 80 mg + 40 mg initiating 12 h before the procedure) or no statin reload (n=80). Occurrence of the primary outcome (30-day incidence of TIA/stroke or new ischemic lesions on cerebral MRI performed at 24-48 h) was lower in the 600-mg clopidogrel arm (18% vs. 35.9% in the 300-mg group; p = 0.019) and in the atorvastatin reload arm (18.4% vs 35.0% in the no statin reload group; p=0.031). High-dose clopidogrel also significantly reduced the TIA/stroke rate at 30 days (0% vs 9%, p = 0.02), without an increase in bleeding risk. The authors concluded that in patients undergoing carotid stenting, a 600-mg clopidogrel load and a short-term reload with high-dose atorvastatin protects against early ischemic cerebral events (Patti G et al, ***J Am Coll Cardiol*** 2013;61:1379-1387)

MADIT CRT: Carvedilol Produces 30% Reduction in Hospitalizations for HF or Death When Compared With Metoprolol

The effects of metoprolol and carvedilol were compared in the MADIT-CR study. Hospitalization for HF or death occurred in 23% on carvedilol and 30% on metoprolol (hazard ratio-HR: 0.70, p=0.001), further attenuated in the subgroup of CRT-D patients (HR: 0.61, p = 0.001) and CRT-D patients with LBBB (HR: 0.51, p < 0.001). Ventricular arrhythmias occurred in 22% and in 26%, respectively, of the patients receiving carvedilol or metoprolol (HR: 0.80, p = 0.050). A dose-dependent relationship was found in carvedilol, but not in metoprolol. The authors concluded that in HF patients in NYHA class I/II & wide QRS, carvedilol was associated with a 30% reduction in hospitalizations for HF or death when compared with metoprolol. A novel beneficial and synergistic effect of carvedilol was seen in patients with CRT-D & LBBB. Finally, a dose-dependent effect was apparent in carvedilol, but not in metoprolol (Ruwald et al, ***J Am Coll Cardiol*** 2013;61:1518–1526).

Colchicine Reduces In-Stent Restenosis (ISR) in Diabetic Patients Receiving a Bare-Metal Stent

A total of 196 diabetic patients, aged 64±7 years, with contraindication to a drug-eluting stent, undergoing PCI with a bare-metal stent (BMS), were randomized to receive colchicine 0.5 mg twice daily or placebo for 6 months. The angiographic in-stent restenosis (ISR) was 16% in the colchicine group and 33% in the control group (p = 0.007; odds ratio: 0.38). The number needed to treat to avoid 1 case of angiographic ISR was 6. The results were similar for IVUS-defined ISR (odds ratio: 0.42; number needed to treat = 5). Lumen area loss was 1.6 mm^2 in colchicine-treated patients and 2.9 mm^2 in the control group (p = 0.002). Adverse events from colchicine were limited to gastrointestinal symptoms. The authors concluded that colchicine is associated with less neointimal hyperplasia and decreased ISR in diabetic patients after PCI with a BMS (Deftereos S et al, ***J Am Coll Cardiol*** 2013;61:1679–1685).

Cryoballoon PVI Comparable to RFC Ablation in AF

Cryoballoon ablation was used for pulmonary vein isolation (PVI) in 605 patients with paroxysmal (n=579) or persistent (n=26) AF. PVI was achieved in 91%. At median follow-up of 30 months (n=451), 278 (~62%) patients were free of AF recurrence with no need for repeat procedures. Rates of freedom from AF after 1, 2, & 3 repeat procedures (using cryoballoon and/or radiofrequency catheter-RFC ablation) were 75%, 76%, and 77%, respectively. Use of the smaller balloons or both balloons produced the highest rates of long-term freedom from AF. Phrenic nerve palsy was noted in 12 patients (2%), resolving within 3-9 months. The authors concluded that long-term freedom from AF after cryoballoon ablation is similar to that reported for radio-frequency ablation. A choice between balloons may improve outcomes (Vogt et al, ***J Am Coll Cardiol*** 2013;61:1707–1712).

STO-AF Trial: Cryoballoon Ablation a Safe and Effective Alternative to Antiarrhythmic Drugs for Symptomatic Paroxysmal AF

Patients with symptomatic paroxysmal AF and previously failed drug therapy underwent 2:1

randomization to either cryoballoon ablation (n=163) or drug therapy (n=82). In 160 (98.2%) patients, 3 or more pulmonary veins (PVs) were isolated. All 4 major PVs were isolated in 97.6% of patients, as were 21 of 21 left common PVs and 10 of 13 right middle PVs. In 83% of patients, cryoballoon alone was sufficient for PV isolation (PVI). At 12 months, treatment success was 70% compared with 7.3% of antiarrhythmic drug patients. Sixty-five (79%) drug-treated patients crossed over to cryoablation during 12 months of study follow-up due to recurrent, symptomatic AF. Twenty-nine of 259 procedures (11.2%) were associated with phrenic nerve palsy; 25 of these had resolved by 12 months. Cryoablation patients had significantly improved symptoms at 12 months. The authors concluded that cryoballoon ablation is a safe and effective alternative to antiarrhythmic medication for patients with symptomatic paroxysmal AF, for whom at least one drug has failed, with acceptable risks (Packer et a, ***J Am Coll Cardiol*** 2013;61: 1713–23).

Substitution of Prasugrel for Clopidogrel in Patients on Triple Therapy Increases the Risk of Bleeding

About 10% of patients who receive dual antiplatelet therapy after PCI have an indication for oral anticoagulation. In a consecutive series of 377 patients who underwent PCI with DES and had an indication for oral anticoagulation were treated with a 6-month regimen of aspirin and oral anticoagulation with either prasugrel or clopidogrel. A total of 21 patients (5.6%) received prasugrel instead of clopidogrel. TIMI major and minor bleeding occurred significantly more often in the prasugrel compared with the clopidogrel group: 6 (28.6%) vs. 24 (6.7%); adjusted hazard ratio (HR): 3.2, p = 0.03). There was no significant difference regarding the secondary endpoint (composite of death, myocardial infarction, ischemic stroke, or definite stent thrombosis): 2 (9.5%) vs. 25 (7.0%). The authors concluded that substitution of prasugrel for clopidogrel in patients needing triple therapy increases the risk of bleeding (Sarafoff et al, ***J Am Coll Cardiol*** 2013;61:2060–2066).

CARE-HF Trial: RV Dysfunction (TAPSE ≤14 mm) is a Prognostic Determinant Among CRT Patients

Of 813 patients in the CARE-HF trial, 688 had tricuspid plane systolic excursion (TAPSE) measured at baseline, and 345 of them were assigned to CRT. Median age was 66 years, LVEF 24%, and TAPSE 19 mm. Those with worst TAPSE (<17.4 mm) were more likely to have ischemic heart disease. Overall, CRT improved LV but not RV structure and function. At median follow-up of 2 years, 213 deaths occurred. Patients with lower TAPSE had a higher mortality, regardless of assigned treatment (p<0.001). Greater inter-ventricular delay, NYHA class, mitral regurgitation, and NT pro–B-NP, lower TAPSE, and assignment to control group were independently associated with higher mortality. Reduction in mortality with CRT was similar in each tertile of TAPSE. The authors concluded that right ventricular (RV) dysfunction is a powerful determinant of prognosis among candidates for CRT, regardless of treatment assigned, but did not diminish the benefit of CRT (Damy et al, J ***Am Coll Cardiol*** 2013;61:2153–2160).

"Real-World" Experience With Dabigatran: No Evidence of Excess Bleeding or MI

Concerns have been raised about an excess of bleeding or myocardial infarction (MI) among patients treated with dabigatran. From a Danish Registry, a dabigatran-treated group (n=4978) and a 1:2 propensity-matched warfarin-treated group (n=8,936) were compared. Stroke and systemic embolism were not significantly different between the 2 groups. Adjusted mortality was significantly lower with both dabigatran doses (110 mg bid, hazard ratio-HR: 0.79; 150 mg bid, HR: 0.57). Pulmonary embolism was lower compared with warfarin for both doses of dabigatran. Less intracranial bleeding was seen with both dabigatran doses (110 mg, HR: 0.24; 150 mg, HR: 0.08). The incidence of MI was lower with both dabigatran doses (110 mg, HR: 0.30; 150 mg, HR: 0.40). Gastrointestinal bleeding was lower with the lower dose of dabigatran 110 mg (HR: 0.60) but not with the higher dose. The authors concluded that in this "everyday clinical practice", there were similar stroke/systemic embolism and major bleeding rates with both doses of dabigatran compared with warfarin. Mortality, intracranial bleeding, pulmonary embolism, and MI were lower with dabigatran, compared with warfarin (Larsen et al, ***J Am Coll Cardiol*** 2013;61:2264–2273)

Direct Transaortic Approach for TAVI is Feasible

Initial US experience with direct transaortic approach to transcatheter aortic valve implantation (TAVI) was reported in 44 patients with inoperable, severe aortic stenosis, ineligible for transfemoral access. Data were compared with those from 76 patients who underwent transapical TAVI. Device implantation success (89% vs. 84%) and 30-day combined safety endpoint of all-cause mortality, MI, major stroke, disabling bleeding, severe acute kidney injury, and valve reintervention (20% vs. 33%) were similar. The transaortic approach was associated with lower combined bleeding and vascular event rate (27% vs. 46%; p = 0.05), shorter median ICU stay (3 vs. 6 days; p = 0.01), and a favorable learning curve. The authors concluded that the transaortic

approach is technically feasible and seems to be associated with favorable outcome (Lardizabal et al, ***J Am Coll Cardiol*** 2013;61:2341–5).

Northern Manhattan Study (NOMAS): Incidentally Detected PFO by Transthoracic Echocardiography has Very Low Prevalence and is not Associated With an Increased Risk of Clinical or Subclinical Stroke

Patent foramen ovale (PFO) presence was assessed by transthoracic echocardiography with saline contrast injection in 1,100 stroke-free individuals aged >39 of a community-based sample followed for a mean of 11 years. Also, 360 participants had MRI for silent brain infarct (SBI) detection. PFO was present in 164 (14.9%). Over a mean follow-up of 11.0 $\pm$ 4.5 years, 111 ischemic strokes occurred (10.1%), 15 (9.2%) in the PFO and 96 (10.3%) in the non-PFO group. The 12.5-year cumulative risk of stroke was 10.1% in the PFO and 10.4% in the non-PFO group (p=NS). The adjusted hazard ratio for PFO and stroke was 1.10. In the MRI subcohort, PFO was not associated with SBI. The authors concluded that in this community-based cohort, PFO was not associated with an increased risk of clinical or subclinical stroke (Di Tullio et al, ***J Am Coll Cardiol*** 2013;62:35–41).

Pregnancy Loss is Associated With an Increased Risk of MI, Stroke, and Renovascular Hypertension: A Possible Risk Factor for Atherosclerotic Disease in Women?

Among women pregnant at least once, a cohort of women was identified with miscarriages, stillbirths, or live singleton births. Among 1,031,279 such women followed for an average of 15 years per woman, 2798 myocardial infarctions (MIs), 4053 strokes, and 1269 cases of renovascular hypertension were detected. Women with stillbirths had 2.7, 1.7, and 2.4 times the rates of MI, strokes, and renovascular hypertension, respectively, as women with no stillbirths. Compared with women with no miscarriages, women with miscarriages had 1.13, 1.16, and 1.20 times the rates of these same outcomes, respectively; these associations were dose dependent, with each additional miscarriage increasing the rates of MI, strokes and renovascular hypertension by 9%, 13%, and 19%, respectively. Associations were strongest in younger women (<35 years). The authors concluded that pregnancy losses were associated with subsequent risks of MI, strokes, and renovascular hypertension, conditions linked to atherosclerosis, making pregnancy loss a possible candidate risk factor for atherosclerotic disease in women, with possible inflammatory processes being the common denominator (Ranthe et al, ***Circulation*** 2013;127:1775-1782).

Swedish Study: AF is an Independent Risk Factor of All-Cause Mortality in Patients Hospitalized With Incident AF and Relative Risk is Higher in Women and Highest in the Youngest Patients

A total of 272,186 patients (≤85 years; 44% women) hospitalized with incidental AF (1995–2008) and 544,344 matched controls were compared. The adjusted long-term relative all-cause mortality risk in women vs. controls was 2.15, 1.72, and 1.44 (P<0.001) in the age categories ≤65, 65–74, and 75–85 years, respectively. These figures for men were 1.76, 1.36, and 1.24 (P<0.001). Among comorbidities, neoplasm, chronic renal failure, and chronic obstructive pulmonary disease contributed most to the increased mortality vs. controls. In patients with AF as the primary diagnosis, the relative risk of mortality was 1.63, 1.46, and 1.28 (P<0.001) in women and 1.45, 1.17, and 1.10 (P<0.001) in men. The authors concluded that AF was an independent risk factor of all-cause mortality in patients with incident AF. Although the actual risk was consistently lower in women, the highest relative risk of mortality was seen in women and in the youngest patients compared with controls (Andersson et al, ***Eur Heart J*** 2013;34:1061–1067)

AFFIRM Study/ Propensity-Adjusted Analysis: Increased Mortality Among Patients Taking Digoxin

The association between digoxin and mortality was assessed in patients enrolled in the AFFIRM trial. Analyses were conducted in all patients and in subsets according to the presence or absence of heart failure (HF). Digoxin was associated with an increase in all-cause mortality (hazard ratio-HR 1.41; P<0.001), cardiovascular mortality (HR 1.35, P = 0.016), and arrhythmic mortality (HR 1.61, P = 0.009). The all-cause mortality was increased with digoxin in patients without or with HF. There was no significant digoxin–gender interaction for all-cause or cardiovascular mortality. The authors concluded that digoxin was associated with a significant 41% increase in all-cause mortality in patients with AF after correcting for clinical characteristics and comorbidities, regardless of gender or of the presence or absence of HF (Whitbeck et al, ***Eur Heart J*** 2013;34: 1481-1488).

AFFIRM Study/ Post Hoc Propensity-Matched Analysis: Lack of Evidence of Increased Mortality Among Patients Taking Digoxin

In the AFFIRM study, 4060 patients with paroxysmal and persistent AF were randomized to rate (n=2027) vs. rhythm (n=2033) control strategies. Of these, 1377

received digoxin as initial therapy. A cohort was assembled of 878 pairs of patients receiving and not receiving digoxin, who were balanced on baseline characteristics. During the 3.4 years of the mean follow-up, all-cause mortality occurred in 14 and 13% of matched patients receiving and not receiving digoxin, respectively (hazard ratio-HR associated with digoxin use: 1.06; P = NS). Also, no association with all-cause hospitalization or incident non-fatal cardiac arrhythmias could be found. The authors concluded that in patients with paroxysmal and persistent AF, no evidence was found of increased mortality or hospitalization in those taking digoxin as baseline initial therapy (Gheorghiade et al, ***Eur Heart J*** 2013;34:1489-1497).

The Post-Hoc Non-Randomized Observational Design of Both the AFFIRM Trial Analyses May Explain the Conflicting Results About the Risk of Digoxin

The editorial comments that accompany the above 2 studies, which are two different analyses of the AFFIRM trial, point to the different design of the studies in order to explain the conflicting results of analysis of the same data. The first editorial indicates that "In the article by Whitbeck et al, digoxin use was assessed at randomization and during follow-up. The association of digoxin use with mortality was evaluated treating digoxin as a time-dependent covariate in a Cox proportional hazard model. By using digoxin as a time-dependent covariate, patients changed from being in the 'on-digoxin' group to the 'not on-digoxin' group if their medication use changed over time in the study, and their associated time at risk for death contributed to each respective group". On the other hand "In the article by Gheorghiade et al, digoxin use was assessed at a fixed time point only, at the time of randomization". The first commenter concludes that "Given the non-randomized, observational design of both studies, the findings should be considered hypothesis generating. Even sophisticated statistical methods such as propensity analysis cannot replace randomization" (Murphy S, ***Eur Heart J*** 2013;34:1465-1467).

The commenters in the second editorial also point to the post hoc and non-randomized design of the analyses, but focus on the high dose of digoxin used indicating that "patients in AFFIRM were receiving high doses of digoxin, since they were encouraged to have an serum level ≥1.0 ng/mL", which "may have contributed to the observed increased mortality". Their concluding remark is that "With regard to the place of digoxin in AF, it is likely that this will further diminish in the future, because of its inefficacy to reduce heart rate during exercise on the one hand, and the outcome of studies such as the study of Whitbeck et al", albeit "low-dose digoxin may still be useful, but trials examining this question are urgently needed" (van Veldhuisen et al, ***Eur Heart J*** 2013;34:1468-1470).

Adding a New Oral Anticoagulant to Antiplatelet Therapy Results in a Modest Reduction in Cardiovascular Events but a Substantial Increase in Bleeding

A meta-analysis was performed of 7 randomized studies evaluating the efficacy and safety of adding a novel oral anticoagulant to single (aspirin) or dual (aspirin and clopidogrel) antiplatelet therapy in patients with acute coronary syndromes (ACS). The analysis comprised 30 866 patients, 4135 (13.4%) on single, and 26 731 (86.6%) on dual antiplatelet therapy, with an ACS within the last 7–14 days. When compared with aspirin alone, the addition of an oral anticoagulant reduced the incidence of major adverse cardiac events (MACE) (hazard ratio-HR 0.70), but increased clinically significant bleeding (HR: 1.79). Compared with dual antiplatelet therapy with aspirin and clopidogrel, adding an oral anticoagulant decreased the incidence of MACE (HR: 0.87), but more than doubled the bleeding (HR: 2.34). The authors concluded that in patients with a recent ACS, the addition of a new oral anticoagulant to antiplatelet therapy results in a modest reduction in MACE but a substantial increase in bleeding, most pronounced with triple therapy (Oldgren et al, ***Eur Heart J*** 2013;34:1670-1680).

CHAMPION PHOENIX: Intravenous Cangrelor Significantly Reduced the Rate of Ischemic Events in Patients Undergoing PCI

A total of 11,145 patients who were undergoing percutaneous coronary intervention (PCI) were randomly assigned to receive a bolus and infusion of cangrelor or a loading dose of 600 mg or 300 mg of clopidogrel. The primary efficacy end point (death, myocardial infarction, ischemia-driven revascularization, or stent thrombosis at 48 hours) occurred in 4.7% in the cangrelor group and 5.9% in the clopidogrel group (odds ratio-OR, 0.78; P=0.005). Stent thrombosis developed in 0.8% in the cangrelor group and in 1.4% in the clopidogrel group (OR, 0.62; P=0.01); this rate at 48 hours was 0.16% in the cangrelor group and 0.11% in the clopidogrel group (OR, 1.50; P=NS). Adverse events were infrequent except for transient dyspnea which occurred more frequently with cangrelor (1.2% vs. 0.3%). The authors concluded that cangrelor significantly reduced the rate of ischemic events, including stent thrombosis, during PCI, with no significant increase in severe bleeding (Bhatt et al, ***N Engl J Med*** 2013;368:1303-1313).

STREAM: Prehospital or Early Fibrinolysis Followed by Timely Coronary Angiography Resulted in Effective Reperfusion in Patients With STEMI Presenting Within 3 Hours and Who Could not Undergo PCI Within 1 Hour, Albeit With a Slightly Increased Risk of Intracranial Bleeding

A total of 1892 patients with STEMI, who presented within 3 hours and who were unable to undergo primary PCI within 1 hour, were randomized to primary PCI or fibrinolytic therapy (tenecteplase) before transport to a PCI-capable hospital. Coronary angiography was performed emergently if fibrinolysis failed; otherwise within 6-24 hours. The primary end point (death, shock, congestive heart failure, or 30-day reinfarction) occurred in 116 of 939 patients (12.4%) in the fibrinolysis group and in 135 of 943 patients (14.3%) in the primary PCI group (relative risk, 0.86; P = NS). Emergency angiography was required in 36.3% of patients in the fibrinolysis group; the remainder underwent angiography at a median of 17 hours. More intracranial hemorrhages occurred in the fibrinolysis group (1.0% vs. 0.2%, P = 0.04; after protocol amendment, 0.5% vs. 0.3%, P = 0.45). The rates of nonintracranial bleeding were similar. The authors concluded that prehospital fibrinolysis with timely coronary angiography resulted in effective reperfusion in patients with early STEMI who could not undergo primary PCI within 1 hour after the first medical contact. However, fibrinolysis was associated with a slightly increased risk of intracranial bleeding (Armstrong et al, ***N Engl J Med*** 2013;368:1379-87).

BLOCK HF Trial: Biventricular is Better than Right Ventricular Pacing in Patients With AV Block and LV Dysfunction With NYHA Class I-III Heart Failure

A total of 691 patients with AV block requiring pacing, NYHA class I-III heart failure and a left ventricular (LV) ejection fraction ≤50% were randomly assigned to right ventricular (RV) or biventricular (BiV) pacing and were followed for an average of 37 months. The primary outcome (death, urgent care visit for heart failure requiring IV therapy, or a ≥15% increase in the LV end-systolic volume index) occurred in 190 of 342 patients (55.6%) in the RV-pacing group, compared with 160 of 349 (45.8%) in the BiV-pacing group (hazard ratio, 0.74). LV lead–related complications occurred in 6.4% of patients. The authors concluded that BiV pacing was superior to conventional RV pacing in patients with AV block and LV systolic dysfunction with NYHA class I-III heart failure (Curtis et al, ***N Engl J Med*** 2013; 368:1585-1593).

BRUISE CONTROL: No Need to Interrupt Warfarin Therapy Before Pacemaker or ICD Implantation

Patients with an annual risk of thromboembolic events of ≥5% were randomized to continue warfarin or to stop it and receive bridging therapy with heparin. The safety monitoring committee asked for termination of the trial after the second prespecified interim analysis. Clinically significant device-pocket hematoma occurred in 12 of 343 patients (3.5%) in the continued-warfarin group, as compared with 54 of 338 (16.0%) in the heparin-bridging group (relative risk, 0.19; P<0.001). Major surgical and thromboembolic complications were rare and similar in the 2 groups (1 tamponade and 1 myocardial infarction in the heparin-bridging group and 1 stroke and 1 TIA in the continued-warfarin group). The authors concluded that compared with bridging therapy with heparin, a strategy of uninterrupted warfarin treatment at the time of pacemaker or ICD implantation significantly reduced the incidence of device-pocket hematomas **(**Birnie et al, ***N Engl J Med*** 2013; 368:2084-2093**)**.

ADVANCE III Trial: Using More Intervals to Detect Ventricular Tachyarrhythmias Reduces Electrical Therapy and Inappropriate ICD Shocks

A total of 1902 patients (mean age 65 years) with ischemic or nonischemic cardiomyopathy receiving an implantable cardioverter defibrillator (ICD) for primary (75%) or secondary prevention were randomized 1:1 to programming with long- (30/40 intervals; n=948) or standard-detection (18/24; n=954) intervals. During a median follow-up of 12 months, long-detection group had 346 delivered therapies vs 557 in the standard-detection group (incident rate ratio - IRR, 0.63; *P*<0.001). The long- vs the standard-detection group experienced 23 vs 37 ATPs per 100 person-years (IRR, 0.58; *P*<0.001); 19 vs 30 shocks per 100 person-years (IRR, 0.77; *P*=0.06), with a significant difference in the probability of therapy occurrence (*P*<0.001); and a reduction in first occurrence of inappropriate shock (5.1 per 100 patient-years vs 11.6; IRR, 0.55; *P*=0.008). Mortality and arrhythmic syncope rates did not differ between groups. The authors concluded that the use of a long- vs standard-detection interval may be preferable as it results in a lower rate of electrical therapy, and inappropriate ICD shocks (Gasparini et al, ***JAMA*** 2013;309:1903-1911).

Receiving a Dual-Chamber ICD for Primary Prevention When there is no Indication for Pacing Confers Similar Mortality at One Year but a Higher Complication Rate

Among 32,034 patients who received an implantable cardioverter defibrillator (ICD) for primary prevention and lacked an indication for pacing, 12,246 (38%) received a single-chamber and 19,788 (62%) a dual-chamber device. Rate of complications was lower for

single-chamber devices (3.51% vs 4.72%; *P*<0.001), but 1-year mortality, 1-year all-cause hospitalization or hospitalization for heart failure were similar. The authors concluded that when used for primary prevention without indication for pacing, dual-chamber ICDs compared with single-chamber devices are associated with a higher risk of device-related complications and similar 1-year mortality and hospitalization outcomes (Peterson et al, ***JAMA*** 2013;309(19):2025-2034).

Multivessel CABG Confers Lower Long-Term Mortality than Multivessel PCI When Comorbidities Exist

Over 5 years of follow-up, among 105,156 propensity score–matched patients (aged >65years) with multivessel coronary disease undergoing revascularization (1992-2008), coronary artery bypass surgery (CABG) was associated with lower mortality than percutaneous coronary intervention (PCI) (hazard ratio-HR, 0.92; *P*<0.001). The difference was greater among patients with diabetes (HR, 0.88), tobacco use (HR, 0.82), heart failure (HR, 0.84), and peripheral arterial disease (HR, 0.85). However, patients with none of these factors had slightly better survival after PCI. The authors concluded that multivessel CABG is associated with lower long-term mortality than multivessel PCI, an association considerably modified by presence of comorbidities, with improvement in survival mainly in patients with diabetes, tobacco use, heart failure, or peripheral arterial disease (Hlatky et al, ***Ann Intern Med*** 2013;158:727-734).

ROCKET AF: Patients Transitioned From Warfarin to Rivaroxaban Had More Bleeding in First 7 Days Atoned After 30 Days

In ROCKET AF, 7897 (~55%) patients were warfarin-experienced (at least 6 weeks of prior treatment) and 6367 (~45%) were warfarin-naive. The effect of rivaroxaban vs warfarin on stroke was consistent: 2.32 rates per 100 patient-years of follow-up vs 2.87 for warfarin-naive patients (hazard ratio-HR, 0.81) and 1.98 vs 2.09 for warfarin-experienced patients (HR, 0.94; *P=NS*). During the first 7 days, rivaroxaban was associated with more bleeding than warfarin (HR in warfarin-naive patients 5.83, and in warfarin-experienced patients, 6.66). After 30 days, rivaroxaban had less bleeding than warfarin in warfarin-naive patients (HR, 0.84) and similar bleeding in warfarin-experienced patients (HR, 1.06; *P* = 0.003). The authors concluded that the efficacy of rivaroxaban in warfarin-experienced and warfarin-naive patients was similar but there were more bleeding events in the first 7 days; after 30 days, rivaroxaban was associated with less bleeding in warfarin-naive patients and similar bleeding in warfarin-experienced patients. Patients enrolled with INRs of 2.0-3.0 had outcomes similar to those with INRs <2.0. The authors recommend that patients who are going to switch from warfarin to rivaroxaban should start 20 mg of rivaroxaban and stop warfarin only when the INR is <3.0 (Mahaffey et al, ***Ann Intern Med*** 2013;158:861-868).

Important Review and Other Articles

Guidelines for the management of patients with peripheral artery disease (Anderson et al, ***J Am Coll Cardiol*** 2013; 61:1555-1570), Management of type B aortic dissection (Fattori et al, ***J Am Coll Cardiol*** 2013; 61:1661-1678), Management of patients with AF (Anderson et al, ***J Am Coll Cardiol*** 2013;61:1935-1944), Genetics of ARVC (Marcus et al, ***J Am Coll Cardiol*** 2013;61:1945-1948), Genomics in cardiovascular disease (Roberts et al, ***J Am Coll Cardiol*** 2013;61:2029-2037), Platelet function tests (Gorog & Fuster, ***J Am Coll Cardiol*** 2013;61:2115-2129), Appropriate utilization of cardiovascular imaging (Carr et al, ***J Am Coll Cardiol*** 2013;61:2199-2206 & Patel et al, ***J Am Coll Cardiol*** 2013;61:2207-2231), Cardiac complications of thoracic irradiation (Jaworski et al, ***J Am Coll Cardiol*** 2013;61:2319-2328), Guidelines for non-STE ACS (Anderson et al, ***J Am Coll Cardiol*** 2013;61:e179-e347), Cardio-hepatic interactions in heart failure (Samski et al, ***J Am Coll Cardiol*** 2013;61:2397-2405), In-hospital cardiac arrest (Morrison et al, ***Circulation*** 2013;127:1538-1563), Early repolarization (Obeyesekere et al, ***Circulation*** 2013; 127;1620-1627), Air pollution and cardiovascular system (Manolis et al, ***Hosp Chronicles*** 2013;8:103-111 & Gold et al, ***Circulation*** 2013; 127:1903-1913), Williams syndrome (Collins II, ***Circulation*** 2013; 127:2125-2134), Pet ownership and cardiovascular risk (Levine et al, ***Circulation*** 2013;127:2353-2363), Valve-in-valve procedure (Webb & Dvir, ***Circulation*** 2013;127: 2542-2550), IVUS (Bangalore & Bhatt, ***Circulation*** 2013;127:e868-e874), Cancer drugs and the heart (Suter & Ewer, ***Eur Heart J*** 2013;34:1102-1111), Management of pericardial effusion (Imazio & Adler, ***Eur Heart J*** 2013; 34:1186-1197), CRT update (Yu & Hayes, ***Eur Heart J*** 2013; 34:1396-1403), Cardiomyopathy work-up (Rapezzi et al, ***Eur Heart J*** 2013; 34:1448-1458), Biomarkers in AF (Hijazi et al, ***Eur Heart J*** 2013;34:1474-1480), Use of PPIs in cardiac patients (Agewall et al, ***Eur Heart J*** 2013;34:1708-1715), Myocardial perfusion injury (Froehlich et al, ***Eur Heart J*** 2013;34:1714-1724), Telemedicine and cardiac implants (Varma & Ricci, ***Eur Heart J*** 2013;34:1885-1893), Acute coronary syndromes (Libby, ***N Engl J Med*** 2013; 368:2004-2013), Management of asymptomatic carotid stenosis (Raman et al, ***Ann Intern Med*** 2013;158:676-685),