137-02

TEMPORAL TRENDS IN HOSPITALIZATION RATES FOR ACUTE ISCHEMIC STROKE AMONG NONAGENARIANS WITH ATRIAL FIBRILLATION IN THE UNITED STATES: A 15 YEAR EXPERIENCE

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Introduction: Nonagenarians (NGs) (age $\geq$ 90 years) constitute 4.7% of those aged $\geq$ 65 years in the United States. Atrial fibrillation (AF) affects nearly 40% of NGs. There are scant data with regard to temporal trends in hospitalization rates for acute ischemic stroke (AIS) among NGs with AF. We assessed temporal trends in hospitalization rates for AIS among NGs with AF over 15 years in the United States.
Methods: National Inpatient Sample (NIS), a publically available dataset, reports data on 8 million hospitalizations from about 1000 hospitals from 46 states. From this, we abstracted data on 1.1 million patients with AF (the AF cohort) hospitalized from 1998 - 2012. We sub-sampled, 56,268 NGs (4.3%) with AF to form the NG cohort. Trends in hospitalization rates for AIS were compared over 3 periods: 1998 - 2002, 2003 - 2008 and 2009 - 2012.
Results: Table 1 details the results. Caucasians formed 88% of the NG cohort. Proportion of females (77%) was higher than males. Diabetes, hypertension, and heart failure increased in prevalence over time. NG with AF had higher hospitalization rates for AIS (3.2%) compared to their younger counterparts (age $<$ 90 yrs) in the AF cohort (2.1%) ($P < 0.001$). Hospitalization rates for AIS remained similar in the time period 1998 - 2008 but marginally increased between 2009 - 2012 in the NG cohort.
Conclusion: NGs with AF have a higher risk of hospitalization for AIS compared to younger patients. Increase in hospitalization rates for AIS in NGs from 2009 - 2012 may indicate a true increase in stroke incidence or may represent surveillance bias due to better stroke diagnosis. Refinement of anticoagulation strategies may help reducing stroke rates in this population.
Table 1:Characteristics of study participants

Variables	Total cohort (n = 56,268)	1998 – 2002 (n = 13,571)	2003 – 2008 (n = 22,122)	2009 – 2012 (n = 20,384)	P-value
Age (yrs)	92.2 (2.6)	92.4 (2.5)	92.4 (2.6)	91.9 (2.5)	<0.001
Female- n (%)	43,599 (77.7)	10,611 (78.2)	17,233 (77.8)	15,755 (77.3)	0.192
Diabetes diagnosis- n (%)	7,442 (13.2)	1,294 (9.5)	2,806 (12.3)	3,342 (16.4)	<0.001
Hypertension diagnosis- n (%)	37,126 (66.0)	7,155 (53.0)	14,683 (66.0)	15,288 (75.0)	<0.001
Old stroke- n (%)	1411 (2.51)	379 (2.79)	535 (2.40)	497 (2.44)	0.051
Heart failure- n (%)	23,836 (42.36)	4,971 (36.61)	9,459 (42.45)	9,406 (46.09)	<0.001
Acute Ischemic stroke- n (%)	2158 (3.84)	520 (3.8)	780 (3.5)	858 (4.2)	0.001

Conflict of interest: none

137-03

CLINICAL ASPECTS IN REAL-LIFE PATIENTS WITH ATRIAL FIBRILLATION AND DIFFERENT ORAL ANTICOAGULANTS

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Background: Oral anticoagulants (OAC) have been first line medication for prevention of thromboembolic events by patients (pts) with non-valvular atrial fibrillation (NVAF) for a long time, although the usage of vitamin K antagonists (VKA) causes many problems for patients and physicians. Novel OAC (NOAC) promise to solve those problems; however, their implementation in practice is undergoing slowly.
Methods: The study enrolled 3542 pts with NVAF under OAC therapy in different Latvian hospitals and ambulatory praxis. Problems associated with OAC were analysed. Bleeding were defined as Clinical Relevant Major Bleeding (CRMB) and clinical relevant non-major bleeding (CRNMB) according to international guidelines. Second group included 245 physicians with clinical experience in treatment and care of non-valvular AF patients applying OAC.
Results: There were 2214 (62.5%) users of VKA and 1328 (37.5%) users of NOAC. CHA2DS2-VASc in VKA group was 3.4 $\pm$ 1.8, in NOAC group it was 2.5 $\pm$ 1.5. Significantly higher incidence of side effects was detected among VKA compared to NOAC users. Bleeding: 31% in VKA vs 3.3% in NOAC users ($p < 0.001$); CRMB in VKA gr.had 52 pts (2.3%) vs 3 (0.2%) CRMB were observed in NOAC (702 dabigatran and 626 rivaroxaban). CRNMB in VKA group had 194 pts (8.76%) vs 21 (1.6%) in NOAC ($p < 0.01$). No significant difference between dabigatran 150 mg and Rivaroxaban 20 mg, 1 CRNMB in dabigatran 110 mg. More than 50% of the VKA users had difficulties to adjust OAC dose and to keep the INR between 2.0 and 3.0 and 31.8% had problems with INR control. NOAC's were was preferred in pts in electrical cardioversion group 64.7% vs. 35.3% VKA with significantly lower rates of adverse events ($p < 0.001$) as bleeding and high safety.
Physicians:13.9% cardiologists, 20.8% internal specialities, 23.8% general practitioners, 8.9% surgeons and others, 32.7% resident physicians. – 48.5% did use NOAC in their practice, but 81.3% of physicians were willing to do it more often. High costs and not sufficient clinical experience were mentioned as main problems for NOAC. According to the physicians, the main problems for VKA are lack of compliance, poor INR control and difficulties in dose adjustment. 82% of doctors did explain interaction of active substances with OAC to their patients.
Conclusions: Clinical usage of OAC for AF patients is more complicated in VKA group due to side effects, complexity of use and lack of information. NOAC are more safety and have significantly less complications and bleeding rate. In electrical cardioversion group NOAC are preferable for use before and after procedure. Physicians find the usage of NOAC less problematic and they would be ready to use NOAC in practice more often. Thromboembolic and bleeding risk factors are not considered properly enough before starting OAC therapy
Conflict of interest: none

137-04

ASSOCIATION OF CARDIAC BIOMARKERS WITH PR INTERVAL PROLONGATION: INSIGHTS FROM THE LIFE-ADULT-STUDY

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Background: The PR (or PQ) interval is the delay between the excitation of the atria and ventricles and is determined by the sum of atrial and atrioventricular nodal conduction. Both long (>200 ms) and short PR intervals (<120 ms) are associated with an increased risk for atrial fibrillation (AF). The aim of this study was to investigate the association between PR interval and blood markers of cardiac stress, myocardial damage and inflammation.
Methods: The LIFE-Adult-Study is a population-based cohort study, which has recently completed the baseline examination of 10,000 randomly selected participants from Leipzig, a major city with 550,000 inhabitants in the east of Germany. In the current analysis, patients >40 years with no overt heart disease, sinus rhythm in ECG, no history of AF or antiarrhythmic drugs (including beta blockers) and available laboratory data (TropT, BNP, CRP, IL6) were included.
Results: The study population comprised 3151 patients (58 $\pm$ 11 years, 48% males). In uni- and multivariable analyses, age ($B = 0.501$, 95% CI 0.294-0.708, $p < 0.001$), male gender ($B = 11.437$, 95% CI 9.598-13.276, $p < 0.001$) and TropT ($B = 14.875$, 95% CI 4.885-24.866, $p = 0.004$) were significantly associated with the PR interval. The prevalences of patients with short and long PR intervals (177 patients (6%) and 147 (5%), respectively) were similar. While none of the biomarkers was associated with short PR interval, TropT remained significantly associated with PR prolongation >200 ms (OR 2.562, 95%CI 1.068-6.145, $p = 0.035$).
Conclusions: TropT is associated with PR interval prolongation which may indicate subclinical heart disease. Longitudinal studies are needed to assess their association with AF.
Conflict of interest: none

137-05

ACCURACY AND USABILITY OF HANDHELD ELECTROCARDIOGRAM RECORDERS TO DETECT ATRIAL FIBRILLATION IN HOSPITALISED PATIENTS

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Purpose: The aim of this study was to evaluate the accuracy and usability of two handheld electrocardiogram (ECG) devices to detect atrial fibrillation (AF) in a hospital setting.
Methods: In total, 503 patients hospitalised at the departments of cardiology (n = 344) and geriatrics (n = 159) received a 12-lead or 6-lead ECG recording. Immediately thereafter, patients were asked to consecutively hold two single-lead handheld ECG devices, i.e. MyDiagnostick (Applied Biomedical Systems, The Netherlands) for one minute and AliveCor (AliveCor Inc., USA) for 30 seconds. Two blinded experienced electrophysiologists reviewed each of the three ECG tracings independently from the others and classified them as AF, atrial flutter, sinus rhythm or uninterpretable. The 12-lead and 6-lead ECGs were used as a 'gold standard' to calculate the sensitivity and specificity of the automated algorithm of each device, as well as the performance after manual review of the tracings.
Results: Handheld recordings were not possible in 11.5% of the patients because they were not able to hold the devices properly, mainly in the very elderly. In the remaining patients (n = 445), 2.8% and 3.4% of the MyDiagnostick and AliveCor recordings were classified as uninterpretable, respectively. Sixty patients (13.5%) had AF at the moment of the screening. Automated analysis of the MyDiagnostick had a sensitivity of 68.3% and a specificity of 94.0%. The automated algorithm of the AliveCor had a lower sensitivity of 50.0% and a higher specificity of 96.6%. After exclusion of patients with an implanted device (n = 67), sensitivity increased to 85.4% and 65.9% for MyDiagnostick and AliveCor respectively, without major impact on specificity (Table). Manual review of the ECG recordings was especially valuable for the AliveCor as it could increase the sensitivity to 92.7%. However, this was at the expense of a decreased specificity.
Conclusion: Using AliveCor or MyDiagnostick handheld recorders for AF screening in a hospital setting seems challenging as not every patient is capable to hold the devices correctly and uninterpretable recordings and incorrect automatic analysis are still common. Exclusion of patients with an implanted device and manual review of the ECG tracings optimises the accuracy for both devices.
Table: Performance of the MyDiagnostick and AliveCor for AF screening in hospitalised patients without an implanted device. NPV: negative predictive value, PPV: positive predictive value. Unreadable recordings are taken into account when calculating the sensitivity and specificity.

Device	Interpretation	Sensitivity	Specificity	PPV	NPV
MyDiagnostick	Automated algorithm	85.4	94.7	66.0	98.2
	Electrophysiologist 1	87.8	90.5	58.1	99.0
	Electrophysiologist 2	82.9	94.4	72.3	98.5
AliveCor	Automated algorithm	65.9	97.6	77.1	95.9
	Electrophysiologist 1	92.7	92.6	71.7	100
	Electrophysiologist 2	92.7	94.1	73.1	99.1

Conflict of interest: none