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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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UPDATED ATRIAL FIBRILLATION MANAGEMENT RECOMMENDATIONS FOR GEORGIAN HOSPITALS BASED ON THE 2020 EUROPEAN SOCIETY OF CARDIOLOGY ATRIAL FIBRILLATION GUIDELINES

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Abstract.

Atrial fibrillation (AF) is the most common cardiac arrhythmia and a major public health problem. Recently substantial new evidence has accumulated regarding AF care. Furthermore, advances in technology for AF diagnosis and management have been made. 2020 European Society of Cardiology AF guideline document reflects recent evidence and contains several major updates in various aspects of AF management including rhythm control, anticoagulation, and risk factor modification.

The objective of this report is to provide a summary of the 2020 European Society of Cardiology AF guideline recommendations for the management of AF for Georgian clinicians and to help promote AF management in an evidence-based manner.

Key words. Atrial fibrillation, cardiac arrhythmia, anticoagulation.

Introduction.

Atrial Fibrillation (AF) is the most common sustained cardiac arrhythmia with an estimated prevalence of 2-4%. It is projected that by 2060 atrial fibrillation will affect 17.9 million individuals in the European Union [1,2]. AF is associated with significant morbidity [3] and mortality [1,4] and healthcare expenditure [5].

The European Society of Cardiology (ESC) and the American Heart Association (AHA) have highlighted in their statements the importance of stroke prevention, rate/rhythm, and symptom control as well as modifiable cardiovascular risk factor optimization [6-8]. This is reflected in ESC's AF Better Care (ABC) pathway (Anticoagulation/Avoid stroke; "B" Better symptom management and "C" for Cardiovascular and Comorbidity optimization) [6] and the AHA's four pillars of atrial fibrillation management (stroke prevention, rate control, rhythm control and lifestyle modification) [9]. Since the publication of the 2016 ESC AF guidelines, [10] a large body of evidence has accumulated in various aspects of AF management leading to several new and modified recommendations in the 2020 ESC AF guidelines [6]. Below we highlight updates to better inform clinicians in the Country of Georgia and facilitate dissemination and adoption of the guideline recommendations. We acknowledge the existing publication by ESC of their 2020 guidelines [6] and summarize them in this document for the purpose of enhancing their dissemination in the country of Georgia.

Note, references #[6,10] apply to the text below as it summarizes the 2020 ESC AF guideline updates in comparison to 2016 ESC AF guideline.

Atrial Fibrillation Diagnosis and Screening.

The 2020 ESC AF guidelines recommend expanding screening for AF in patients who are older than 65 years and 75 years of age, depending on their comorbid conditions. The 2020 ESC AF guidelines outline definitions to distinguish clinical, subclinical AF and Atrial High-Rate Episodes (AHRE). Clinical AF diagnosis criteria, in both symptomatic or asymptomatic individuals includes surface ECG documentation of AF for 30 seconds or more. ECG recording methodology can include standard 12-lead ECG or a single lead ECG. Subclinical AF is defined as presence of AF, atrial flutter or atrial tachycardia captured by cardiac implantable electric device or wearable in an asymptomatic individual where presence of AF is not confirmed by surface ECG. AHRE is defined as pre-specified, programmed episodes detected by the atrial lead of a cardiac implantable electric device without clear identification of rhythm.

New recommendations regarding AF screening are also highlighted in the 2020 ESC Guidelines. Whereas opportunistic screening for AF was recommended for individuals >=65 in the 2016 AF guidelines, the 2020 guidelines recommend such screening to expand and include individuals with hypertension and obstructive sleep apnea (Class I). In addition, systematic ECG screening is recommended for individuals who are 75 or

older or have increased stroke risk. Lastly, patient education about the significance for AF screening and detection as well as management framework to refer and treat patients who screen positive is now recommended (Class I).

Structured AF Management.

The 2020 ESC guidelines recommend management of individuals with AF diagnosis using Atrial Fibrillation Better Care (ABC) pathway. ABC components include "A" - Anticoagulation/Avoid stroke; "B" Better symptom management and "C" for Cardiovascular and Comorbidity optimization. This recommendation is stronger than the one made in the 2016 ESC guidelines as it was changed to a Class I recommendation. ESC calls for integrated, patient-centered AF management with emphasis on collection and reporting of patient reported outcomes as Class I recommendation to improve quality of life and treatment success. Furthermore, it recommends tracking AF quality of care to optimize AF management by health systems (Class IIa). While the 2016 AF guidelines also recommended patient-centered care, (Class IIa) the recommendation level has been upgraded and specific framework of discussing advantages and limitations, risk, and benefits of treatment options as well as burden of treatment, are recommended as a Class I recommendation in the 2020 AF guidelines. Furthermore, characterization of AF in every individual with the 4S framework (stroke risk, symptom severity, AF burden and AF substrate) is recommended.

Stroke Prevention.

The 2020 ESC AF guidelines expand the assessment of bleeding risks to all patients with AF because stroke prevention with careful consideration of bleeding risk is one of the core components of AF management. Per the 2020 ESC AF guidelines, the bleeding risk should be estimated at the index visit using the HASBLED score to determine frequency and interval of bleeding risk re-assessment (Class IIa). While the 2016 guidelines recommended bleeding score assessment for individuals with AF who were on anticoagulation therapy (Class IIa), the 2020 guidelines recommend such risk assessment in all individuals with AF (Class I). Furthermore, the calculated bleeding risk score should not be used as a sole guide for anticoagulation therapy decision if absolute contraindication for such therapy is not present (Class III). Both, the stroke risk assessment with CHADSVASC score and bleeding risk assessment should occur at periodic intervals (Class I), while patients with low initial stroke risk need close reassessment of the risk (Class IIa) to ensure that stroke prevention opportunities are not missed. The 2016 AF guidelines recommended that individuals treated with vitamin K antagonists may have been considered for novel oral anticoagulant therapy if INR was not in optimal range despite medication adherence or if the patient preferred it (Class IIb). The 2020 guidelines recommend that patients who have inadequate INR for prolonged time (time in therapeutic range <70%), should be switched to novel oral anticoagulant agent as long as the patient can adhere to the therapy (Class I) or efforts to improve time in therapeutic range with interventions including education should be pursued (Class IIa). The 2020 ESC guidelines classify as harmful practice (Class III), guiding thromboprophylactic therapy using the AF clinical pattern (paroxysmal, persistent etc.).

Specific circumstances.

Peri-Cardioversion thromboprophylaxis: The 2020 ESC AF guidelines maintain emphasis on the need for anticoagulation therapy after cardioversion unless the onset of AF is within 24 hours and the stroke risk is low according to the CHADVASC score. In the 2016 AF guidelines, the need for an anticoagulation therapy before and after direct current cardioversion was emphasized. The 2020 AF guidelines build on previous recommendation and guide clinicians to inform patients about the importance of this practice (Class I). The 2020 AF guidelines allow consideration to omit the 4-week anticoagulation therapy after cardioversion if the onset of AF is definitely <24 hours and individual's stroke risk is low (CHADSVASC score is 0 in men and 1 in women) (Class IIb). On the other hand, anticoagulation should be continued for at least 4 weeks when AF duration has been more than 24 hours (Class IIa). The 2016 AF guidelines did not provide such cutoff duration (48 hours vs 24 hours) and noted that further research in this area was needed.

Peri-catheter ablation thomboprophylaxis: The 2020 ESC AF guidelines recommend (Class I) anticoagulation for 3 weeks prior to ablation for individuals with stroke risk factors and notes that evaluation for presence of intracardiac thrombus via transesophageal echocardiography is an acceptable alternative (Class IIa). For individuals who are already on anticoagulation, no interruption in peri-ablation period is recommended.

The 2016 guidelines recommended at least 8 weeks of uninterrupted oral anticoagulation after catheter ablation (Class IIa), while the 2020 guidelines clarify this recommendation and recommend at least 2 months of uninterrupted anticoagulation after ablation with warfarin or novel oral anticoagulant agents (Class I). At 2 months, decision on continued anticoagulation should be based on individual's stroke risk profile rather than outcome of the ablation procedure (Class I).

Thromboprophylaxis in individuals with ACS.

In the setting of acute coronary syndrome: the 2020 ESC AF guidelines recommend that individuals who undergo uncomplicated percutaneous coronary intervention and their risk of stent thrombosis is low, or bleeding risk is higher than stent thrombosis aspirin should be stopped early (<1 week) and thromboprophylaxis with combination of oral anticoagulants and P2Y12 inhibitor should be continued for up to 12 months (Class I).

In the setting of chronic coronary syndrome: 2020 ESC AF guidelines recommend that individuals who undergo uncomplicated percutaneous coronary intervention and their risk of stent thrombosis is low, or bleeding risk is higher than stent thrombosis, aspirin should be stopped early (<1 week) and thromboprophylaxis with combination of oral anticoagulants and clopidogrel should be continued for up 6 months.

Thromboprophylaxis after intracranial hemorrhage.

The 2020 ESC AF guidelines update the recommendation regarding thromboprophylaxis after intracranial hemorrhage. The re--initiation of anticoagulation therapy (with preference for novel oral anticoagulant therapy over vitamin K antagonists) should be considered in individuals with high risk of ischemic

stroke, in consultation with a neurologist or vascular neurologist after traumatic intracranial hemorrhage and after spontaneous intracranial hemorrhage with careful evaluation of risk-benefit ratio (Class IIa). The 2016 ESC AF guideline provided guidance that oral anticoagulation could be resumed after 4 to 8 weeks of intracranial hemorrhage as long as the cause of the event or its risk factors were addressed (Class IIb).

Thromboprophylaxis for post-operative AF.

The 2020 ESC guidelines downgraded the level of recommendation (from Class IIa to Class IIb) for consideration of long-term oral anticoagulation therapy for individuals at risk of stroke who develop post-operative (cardiac surgery) AF.

Bleeding management: In an individual on vitamin K antagonist who develops severe bleeding, four factor prothrombin concentrate should be considered for management (Class IIa)

Rate Control: Rate control therapy recommendations in populations other than pregnant women (described below) have not been changed since the 2016 AF guidelines.

Rhythm Control: The 2020 ESC AF guidelines recommend timely referral of symptomatic women with paroxysmal or persistent AF for rhythm control therapies when indicated (Class IIa)

Pharmacologic Cardioversion: The 2020 ESC AF guidelines adds new recommendation where pharmacologic cardioversion for individual with hemodynamically stable AF is only recommended after evaluation of risk for thromboembolism (Class I). In addition, the guidelines recommend against pharmacologic cardioversion in individuals with AF and history of sick-sinus syndrome, atrioventricular conduction disturbances or severe QTc interval prolongation (QTc >500 ms) without careful consideration of risks for arrhythmia and bradycardia.

Catheter Ablation.

The 2020 ESC guidelines highlight catheter ablation as a safe and effective means for rhythm control.

First line therapy: The 2020 guidelines suggest less conservative indications for catheter ablation and recommends ablation to be considered as first line therapy in both symptomatic and select asymptomatic individuals who have paroxysmal AF (Class IIa), persistent AF without considerable recurrence risk provided it is in line with patient preference and the risk/benefit ratio is considered (Class IIb). Similarly, consideration of AF catheter ablation for individuals who are intolerant to rate control therapy with beta-blockers or failure of one rhythm control medication use for patients with paroxysmal or persistent AF (Class IIa) is suggested by the updated guidelines.

After drug therapy failure: For symptomatic individuals with AF, the 2020 AF ESC guidelines lowers the threshold for catheter ablation consideration and modifies the level from Class IIa in 2016 to Class I and recommends pulmonary vein isolation for individuals whose ablation procedure fails (whether due to failure or intolerance) to one anti-arrhythmic agent despite the type of AF (paroxysmal, persistent with and without major risks for recurrence) as Class I indication.

Repeat Ablation: The 2020 guidelines also suggest considering repeating pulmonary vein isolation procedure in case of AF recurrence if the individuals' symptoms improved after the index procedure (Class IIa).

Procedural Considerations: Complete electrical isolation of all pulmonary veins is recommended in the 2020 AF guidelines and evidence is upgraded to Class I from Class IIa in the 2016 guidelines. It is noted that ablation outside pulmonary veins has uncertain significance at this point but can be considered (Class IIb).

The 2020 ESC AF guidelines are more conservative regarding recommending cavo-tricuspid isthmus line ablation for individuals with history of typical atrial flutter or inducible atrial flutter during the AF ablation procedure and recommendation level changed from Class IIa in 2016 to Class IIb in the 2020 guidelines.

General considerations: In addition, the 2020 ESC guidelines add new recommendations to consider risks of ablation procedures and AF recurrence and to engage patient to decide whether to pursue ablation therapy (Class I).

Ablation in individuals with Heart Failure.

The 2016 AF guidelines recommended AF ablation for individuals with symptomatic AF if tachycardia-mediated cardiomyopathy (heart failure with reduced ejection fraction) was suspected in order to improve symptoms and help with cardiac function recovery (Class IIa). In the 2020 guidelines, this recommendation was modified and expanded to note that AF ablation should be considered in this population despite symptom status given benefit of cardiac function recovery (Class I) and in select patients ablation can be considered to improve long term morbidity and mortality (Class IIa).

Anti-Arrhythmic Therapy.

Sotalol: The 2020 ESC AF guidelines call for close surveillance of individuals with AF treated with sotalol as Class I recommendation (potassium level, creatinine clearance, QTc interval and other pro-arrhythmic factors). Its use can be considered in individuals with normal left ventricular function despite presence of ischemic heart disease as long as factors noted above are carefully monitored (Class IIb)

Flecainide: Individuals treated with flecainide should also be considered to be simultaneously treated with atrioventricular node blocking agent, as long as it can be tolerated (Class IIb)

Amiodarone: The 2020 ESC guidelines call for use of anti-arrhythmic medications other than amiodarone as first line for rhythm control despite its proven efficacy given associated side effects. The recommendation level was updated from Class IIa in 2016 to Class Ia.

Lifestyle modification.

The 2020 ESC AF guidelines call for identification (Class I) and control of modifiable AF risk factors and avoidance of triggers to promote maintenance of sinus rhythm, decreasing AF burden and improving symptom control (Class I). While weight loss was also recommended by the 2016 ESC AF guidelines for individuals with AF, the recommendation level was upgraded to Class I from Class IIa with special emphasis of the importance of this intervention for patients undergoing ablation. Blood

pressure control recommendation level was also upgraded from Class IIa to Class I, and it is highlighted that benefits include both stroke and bleeding risk reduction rather than bleeding risk reduction alone. While the 2016 guidelines recommended moderate regular physical activity with counseling for adverse effects of intense exercise for AF risk (Class I), the 2020 AF guidelines state that physical activity in general should be considered to prevent incident or recurrent AF with the exception of intense exercise (Class IIa). Additionally, the 2020 ESC guidelines still recommend management of obstructive sleep apnea but notes its benefits to include reduction of AF incidence, progression, recurrence, and symptoms (Class IIb) instead of AF recurrence and treatment results alone as was noted in the 2016 guidelines (Class IIa).

Special circumstances.

Pregnancy: The 2020 ESC guidelines added new recommendation for long-term management of pregnant women with AF. It recommends consideration of digoxin or calcium channel blocker verapamil if rate control is not successful with beta-blocker therapy (Class IIb). If AV nodal blocking agents fail to maintain sinus rhythm, rhythm control with flecainide, propafenone, or sotalol should be considered (Class IIa). For women with hemodynamically stable AF and structurally normal heart, ibutilide or flecainide use could be evaluated to restore rhythm (Class IIb). Lastly, among pregnant women with hypertrophic cardiomyopathy and persistent AF, cardioversion can be considered (Class IIa).

Conclusion.

We have provided a summary of the updated AF management recommendations based on 2020 ESC AF guidelines. Major updates include importance of patient centered care; addressing modifiable AF risk factors to promote maintenance of sinus rhythm; lowering threshold for consideration of catheter ablation; importance of stroke and bleeding risk assessment at index visit and then during follow-up; and updated guidance of anticoagulation management in select patient populations.

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