Prosthetic Heart Valves + Antithrombotic Therapy

Purpose

Define types of prosthetic heart valves and review various indications for anticoagulant and antiplatelet use depending on valve type and location

Oral Anticoagulants

vitamin K antagonist (VKA) or warfarin

direct oral anticoagulant (DOAC)
dabigatran
apixaban, edoxaban, rivaroxaban

Oral Antiplatelets

aspirin (ASA)

clopidogrel

others: prasugrel, ticagrelor

SAPT: single antiplatelet therapy
DAPT: dual antiplatelet therapy

Guidelines

2023 ACC/AHA Afib Guidelines

2021 ESC/EACTS Guidelines for the management of valvular heart disease

2020 ACC/AHA Valvular Heart Disease Guidelines

Pertinent Literature

RIVER trial

ENAVLE trial

GALILEO trial

ATLANTIS trial

RE-ALIGN trial

PROACT Xa trial

Other Resources

AC Forum
Rapid Resources

DOACs & Valvular Heart Disease

Transcatheter Aortic Valve Replacement

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Bioprosthetic Valves

The Basics

Preferred for patients >65 years of age

Preferred when anticoagulation is contraindicated

Surgical or transcatheter approach

Long term anticoagulation only needed if there is another indication

Pertinent Literature

Clinical Guidelines

- 2023 ACC/AHA Afib Guidelines
- 2021 ESC/EACTS Guidelines for the management of valvular heart disease
- 2020 ACC/AHA Valvular Heart Disease Guidelines

RIVER Trial

- Rivaroxaban vs. warfarin
- Afib or Aflutter + bioprosthetic mitral valve
- Noninferior for composite outcome: death, major cardiovascular events, major bleeding

ENAVLE Trial

- Edoxaban vs. warfarin
- Mitral or aortic bioprosthetic valve
- Similar efficacy results regarding composite outcome: death, thromboembolic event, cardiac thrombus
- Slightly more bleeding with edoxaban

antithrombotic therapy

Warfarin for 3 months preferred

Use of DOAC not unreasonable

Long term anticoagulation only if other indication exists

Transcatheter Valves

The Basics

- Severe, symptomatic valve stenosis or regurgitation
- Transfemoral or transapical insertion of bioprosthetic valve
- Less invasive valve replacement approach
- TAVR criteria: elderly/frail, severe comorbid conditions
- TMVR criteria: high risk non-surgical candidates; less common

Pertinent Literature

Clinical Guidelines

- 2023 ACC/AHA Afib Guidelines
- 2021 ESC/EACTS Guidelines for the management of valvular heart disease
- 2020 ACC/AHA Valvular Heart Disease Guidelines

GALILEO Trial

- Rivaroxaban + ASA vs. DAPT
- Rivaroxaban higher rates of composite outcome (death, TE event) and more major bleeding
- Trial stopped early

ATLANTIS Trial

- Apixaban vs. warfarin (with anticoagulation indication) or antiplatelet therapy (without anticoagulation indication)
- Similar efficacy and safety results with apixaban vs. warfarin or antiplatelet

Antithrombotic therapy

- DAPT for 3-6 months
- SAPT Indefinitely
- Anticoagulation only if other indication

Mechanical Valves

The Basics

- Expected to last 20 years or more
- Preferred in younger patients
- Patient must be candidate for warfarin
- ASA no longer encouraged with VKA*
- Aortic and mitral are most common

*unless On-X aortic valve with INR goal 1.5-2

Pertinent Literature

Clinical Guidelines

- 2023 ACC/AHA Afib Guidelines
- 2021 ESC/EACTS Guidelines for the management of valvular heart disease
- 2020 ACC/AHA Valvular Heart Disease Guidelines

RE-ALIGN Trial

- Dabigatran vs. warfarin with mechanical heart valves
- Excessive thromboembolism and bleeding with dabigatran
- Trial stopped early

PROACT Xa Trial

- Apixaban vs. warfarin with On-X mechanical aortic valve
- Higher rates of valve thromboses with apixaban
- Trial stopped early

antithrombotic therapy

Warfarin indefinitely with INR goal 2-3

Exceptions

- mitral or tricuspid valve
- aortic valve + risk factors
  - tilting disc or ball-in-cage
  - atrial fibrillation
  - hypercoagulable state
  - history of thromboembolism
  - left ventricular systolic dysfunction

INR goal 2.5-3.5:

INR goal 1.5-2 + ASA:

- On-X aortic valve after 3 months