Ankylosing Spondylitis Genotyping (HLA-B27)

Indications for Ordering

Use as adjunct test for diagnosis in individuals symptomatic for ankylosing spondylitis (AS)
• Should not be performed in asymptomatic individuals or those who do not have high suspicion for AS based on specific symptoms

Test Description

Ankylosing Spondylitis (HLA-B27) Genotyping
• Polymerase chain reaction/fluorescence monitoring

HLA-B27
• Qualitative flow cytometry

Tests to Consider

Ankylosing Spondylitis (HLA-B27) Genotyping 0050392
• May assist in the diagnosis of ankylosing spondylitis, juvenile rheumatoid arthritis, and Reiter’s syndrome
• Tests are not diagnostic for these disorders and should be correlated with other clinical signs and symptoms

HLA-B27 0095840
• Flow cytometry is the preferred test for most patients since sensitivity and specificity are nearly equivalent to the HLA-B27 PCR genotyping test

Disease Overview

Prevalence – based on ethnicity
Gender – female: male, 1:2
Symptoms
• Lower back pain and stiffness
• Arthritis of spine, knees, hips, shoulders
• Fever
• Fatigue, malaise, weight loss
• Anemia
• Other potential organs involved
  o Eyes
  o Lungs
  o Kidneys
  o Heart

• Confirmation of diagnosis requires classic x-ray findings
  o Blurring of bony margins of joints
  o Bilateral sacroiliac involvement
  o Patchy sclerosis with superficial bony erosions
  o Late-squaring of vertebral bodies with bamboo spine and complete ankylosis

Genetics

Genes – HLA-B27

Inheritance – multifactorial

Structure/function

Located on chromosome 6
• Encodes for protein with many functions
  o Phagocytosis in infectious diseases
  o Graft rejection
  o Ability to recognize self from non-self in the immune system
• Strong genetic association between HLA-B27 and AS

Mutations

At least 49 subtypes identified

Test Interpretation

Sensitivity/specificity
• Clinical sensitivity – 90%
• Clinical specificity in an unaffected individual without a family history – <1%
• Analytical sensitivity/specificity – >99%

Results

• Positive – one copy of HLA-B27 detected
  o Associated with AS and related disorders (Reiter syndrome, anterior uveitis, psoriatic arthritis, and inflammatory bowel disease)
• Negative – no copy of HLA-B27 identified
  o Does not rule out AS, as 10% of affected individuals lack this antigen
  o Clinical sensitivity – 90%

Limitations

• Contraindicated for prenatal or carrier testing
• Other HLA types will not be detected
• Rare diagnostic errors can occur due to probe-site mutations