Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection

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Table 15j. Antiretroviral-Therapy-Associated Adverse Effects and Management Recommendations—Osteopenia and Osteoporosis (Last updated May 22, 2018; last reviewed May 22, 2018)

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<th>Adverse Effects</th>
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| Osteopenia and Osteoporosis | Any ART regimen | Onset:  
- Any age; decrease in BMD usually seen soon after initiation of ART.  
Presentation:  
- Usually asymptomatic  
- Rarely presents as osteoporosis, a clinical diagnosis defined by evidence of bone fragility (e.g., fracture with minimal trauma). | BMD z Score Less Than -2.0  
- <10% in U.S. cohorts  
- Approximately 20% to 30% in international cohorts | Longer duration and greater severity of HIV disease  
Vitamin D insufficiency/deficiency  
Delayed growth or pubertal delay  
Low BMI  
Lipodystrophy  
Non-black race  
Smoking  
Prolonged systemic corticosteroid use  
Medroxyprogesterone use  
Lack of weight-bearing exercise | Prevention:  
- Ensure sufficient calcium intake and vitamin D sufficiency.  
- Encourage weight-bearing exercise.  
- Minimize modifiable risk factors (e.g., smoking, low BMI, use of steroids or medroxyprogesterone).  
- Use TAF instead of TDF whenever possible.  
Monitoring:  
- Assess nutritional intake (calcium, vitamin D, and total calories).  
- Strongly consider measuring serum 25-OH-vitamin D levels, particularly in those patients taking ARVs of concern.a  
- Obtain a DXA. 
Same options as for prevention.  
Consider changing the ARV regimen (e.g., switching from TDF to TAF, and/or from LPV/r to EFV or an INSTI whenever possible).  
Treat with vitamin D3 to raise serum 25-OH-vitamin D concentrations to >30 ng/mL.  
The role of bisphosphonates in managing osteopenia and osteoporosis in children with HIV has not been established. |

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a Some experts periodically measure 25-OH-vitamin D. This is especially important in youth with HIV infection who live in urban areas; the prevalence of vitamin D insufficiency is high in that population.

b Until more data are available about the long-term effects of TDF on bone mineral acquisition in childhood, some experts obtain a DXA at baseline and every 6 to 12 months for prepubertal children and for children in early puberty who are initiating treatment with TDF. Obtaining a DXA could also be considered for adolescent women on TDF and medroxyprogesterone and for children with indications not uniquely related to HIV infection (such as cerebral palsy).

Key to Acronyms: ART = antiretroviral therapy; ARV = antiretroviral; BMD = bone mineral density; BMI = body mass index; DXA = dual-energy x-ray absorptiometry; EFV = efavirenz; INSTI = integrase strand transfer inhibitor; LPV/r = lopinavir/ritonavir; PI = protease inhibitor; TAF= tenofovir alafenamide; TDF = tenofovir disoproxil fumarate

References

Osteopenia and Osteoporosis


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