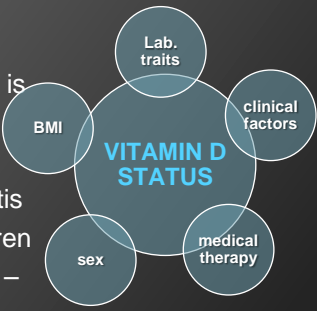


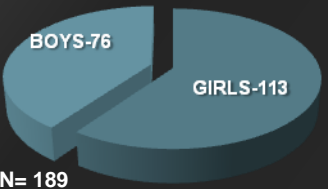
Treatment with methotrexate as a potential risk factor for vitamin D deficiency in patients with juvenile idiopathic arthritis

Background:

- The vitamin D deficiency is common in adults with autoimmune diseases, including rheumatoid arthritis
- Vitamin D status in children with autoimmune diseases – data inconsistent
- Risk factors of decreased vitamin D level in children with Juvenile Idiopathic Arthritis: Questions remain unanswered



Study subjects:



N= 189
 AGE: 12.3 ± 3.9 years

Clinical manifestation

oligoarticular (49%),
 polyarticular (44%),
 systemic (7%)

Objectives:

- To evaluate 25-hydroxyvitamin D serum concentration [25(OH)D] in children with JIA
- To determine risk factors of vitamin D deficiency in children treated for JIA

Methods:

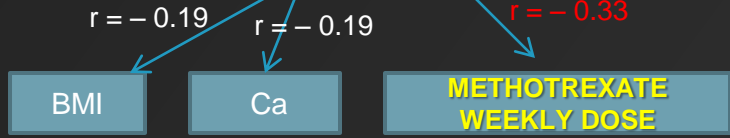
- Clinical assessment
- Anthropometric measurements
- Medical records
- Laboratory tests:
 - 25OHD
 - serum Ca and P
 - ALP
 - CRP and ESR
- Medical therapies
 - Glucocorticoids (GCS)
 - Methotrexate (MTX)
 - GCS + MTX

Mean 25(OH)D = 16.26 ± 9.4 (ng/ml)

Comparison between JIA patients with normal and deficient 25OHD levels

| | 25(OH)D < 20 ng/ml | 25(OH)D > 20 ng/ml | p |
|-------------|--------------------|--------------------|-------|
| N (%) | 127 (68.3%) | 59 (31.7%) | |
| Age (yrs) | 12.5 ± 3.6 | 11.2 ± 4.7 | NS |
| Weight (kg) | 48.4 ± 16.9 | 43.4 ± 21.6 | NS |
| Height (cm) | 153 ± 19 | 146 ± 26 | NS |
| BMI | 19.9 ± 3.7 | 18.9 ± 4.6 | NS |
| GCS (mg) | 8.4 ± 5.8 | 6.8 ± 4.0 | NS |
| MTX (mg/wk) | 17.2 ± 6.2 | 13.6 ± 5.9 | 0.017 |
| CRP (mg/L) | 6.0 ± 16.1 | 11.3 ± 24.7 | NS |
| Ca (mmol/L) | 2.48 ± 0.09 | 2.52 ± 0.12 | 0.009 |
| P (mg/dl) | 4.5 ± 0.6 | 4.5 ± 0.7 | NS |
| ALP IU/L) | 169.0 ± 79.3 | 171.7 ± 65.5 | NS |
| ESR (mm/h) | 18.4 ± 19.2 | 25.3 ± 22.7 | 0.045 |

Significant correlations for 25(OH)D in children with JIA



25(OH)D level was independent of:

- Clinical features / disease manifestation
- Age
- Sex
- Inflammatory markers

JIA treatment: significant univariate correlations

| | MTX weekly dose | GCS daily dose |
|---------|-----------------|----------------|
| 25(OH)D | r = - 0.33 | r = 0.11 |
| Ca | r = - 0.31 | r = - 0.23 |
| P | r = - 0.23 | r = - 0.06 |
| ALP | r = 0.08 | r = - 0.79 |

Conclusions

- Majority of children with JIA have significantly reduced 25(OH)D levels independent of clinical manifestations
- Methotrexate is an important risk factor for suboptimal vitamin D status in JIA, therefore, patients on MTX therapy may require a correction of vitamin D supplementation\
- Methotrexate and glucocorticosteroids have significant influence on calcium / phosphate metabolism in children with JIA. This confers a possible risk of deteriorated bone density & structure and impaired skeletal accrual during growth.