Prevalence of Serum 14-3-3\(\eta\) in Juvenile Idiopathic Arthritis

Background

- Among inflammatory joint diseases that have an onset before the age of 16 years, juvenile idiopathic arthritis (JIA) is the most common.\(^1\)
- Diagnosis of JIA is based on clinical factors and 2 biomarkers associated with poor disease outcome: rheumatoid factor (RF) and cyclic citrullinated peptide (CCP) antibodies.\(^1,2\)
- The biomarker 14-3-3\(\eta\) is highly sensitive and specific for rheumatoid arthritis (RA) in adults\(^3\); however, utility of 14-3-3\(\eta\) in JIA has not been studied.
- **Objective**: The investigators assessed serum levels of 14-3-3\(\eta\) in JIA patients and evaluated the prevalence of the biomarker.

Methods

- Serum levels of 14-3-3\(\eta\) protein, RF, and CCP antibodies were measured in 100 patients from the Pediatric Rheumatology Core at Children's Hospital of Los Angeles.
- Patients were categorized into 4 groups with
  - Polyarticular JIA and RF positive (PJIA RF+: 31)
  - Polyarticular JIA and RF negative (PJIA RF-): 32
  - Psoriatic arthritis: 12
  - Oligoarticular JIA (OJIA): 25
- An enzyme-linked immunosorbent assay (ELISA) established at Quest Diagnostics was used to measure levels of 14-3-3\(\eta\). A level of \(\geq 0.2\) ng/mL was considered positive.
- Levels of RF were measured by immunoturbidimetry; levels of CCP antibodies were measured by immunoassay.
- Disease activity was assessed using a validated disease activity score.
- Correlations between 14-3-3\(\eta\) positivity and RF/CCP antibody positivity and disease activity were evaluated using Fisher's exact test and Mantel-Haenszel statistics.

Results

- Of 28 patients who were positive for 14-3-3\(\eta\)
  - 8 were negative for RF and CCP antibodies
  - 20 were positive for RF or CCP antibodies
  - 15 were positive for RF and CCP antibodies
- The PJIA RF+ group had the highest percentage of positive 14-3-3\(\eta\) (58%) results.
- Positivity for 14-3-3\(\eta\) correlated with positivity for RF and CCP antibody.
- Positivity for 14-3-3\(\eta\) did not correlate with disease activity or age of onset.

Conclusions

- 14-3-3\(\eta\) positivity correlates with RF and CCP antibody positivity, and is most prevalent in PJIA RF+ patients.
- Further study is needed to determine whether 14-3-3\(\eta\) levels are helpful in the diagnosis, prognosis, or treatment of JIA patients.

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**Authors**

Iris Reyhan,\(^1\) Olga S Zhukov,\(^2\) Robert J Lagier,\(^3\) Robert Bridgforth,\(^4\) Gary J Williams,\(^5\) Joanna M Popov,\(^2\) Stanley J Naides,\(^6\) Andreas Reiff\(^6\)

**Affiliations**

\(^1\) Children's Hospital of Los Angeles, Los Angeles, CA
\(^2\) Quest Diagnostics Nichols Institute, San Juan Capistrano, CA
\(^3\) Quest Diagnostics, Alameda, CA

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**References**