USING PATIENT-RELEVANT VARIABLES TO DESCRIBE THE DISEASE COURSE IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS: RESULTS FROM THE REACCH-OUT COHORT

Poster: FRI0499

J Guzman, T Loughin, A Henrey, R Berard, N Shiff, R Jurencak, S Benseler, L Tucker on behalf of ReACCh-Out Investigators

BACKGROUND

The course and severity of juvenile idiopathic arthritis (JIA) varies among and within current International League of Associations for Rheumatology (ILAR) categories [1].

In a previous study patients, parents and clinicians prioritized quality of life, pain, active joint counts, medication requirements and medication side-effects as the most important variables in describing the course of JIA [2].

Focusing on these patient-relevant variables is likely to result in clinically meaningful disease course groups and a definition of a severe course.

OBJECTIVE

To define distinct disease course groups among children with JIA based on observed changes in quality of life, pain, active joint counts, medication requirements and medication side-effects during the first 5 years of the disease.

METHODS

- The Research in Arthritis in Canadian Children emphasizing Outcomes (ReACCh-Out) inception cohort followed newly diagnosed children with JIA between 2005 and 2010 with study visits at 0, 6, 12, 18, 24, 36, 48 and 60 months [3]
- Here, we included 618 children who attended at least 6 of 8 study visits within the first 5 years after diagnosis
- Health-related quality of life was measured with the Quality of My Life 100mm visual analogue scale [4].
- Pain was measured with a horizontal 100 mm visual analogue scale.
- Active joint counts were reported by the attending pediatric rheumatologist
- Each current medication was given a weight and weights were added to obtain a medication requirements score:
  - Corticosteroid injection = 1
  - Non-steroidal anti-inflammatory = 1.5
  - DMARD = 3
  - Systemic corticosteroid = 3
  - Multiple DMARD = 5
  - Biologics = 8
- Side effects reported in the Juvenile Arthritis Quality of Life Questionnaire [5] were weighted according to their frequency to obtain a side-effects score. From 0=no side effects, to 10=side effect resulting on death or disability. Includes poor appetite, mouth sores, nausea/vomiting, abdominal pain, heartburn, diarrhea, constipation, skin rash, dysuria, headache.
- Patients were grouped by course using multivariable cluster analysis and K-means clustering.
- Silhouette coefficients, R-Square statistics and clinical judgment were used to select the ideal number of clusters.
- The frequency of each disease course was described by JIA category.

RESULTS

Four disease course clusters provided the best discrimination (Fig 1 to 4).

Children with oligoarthritis most often followed a Mild course (Fig 5, Table 1).

Almost half the children with RF-neg polyarthritis, systemic and psoriatic JIA followed a Moderate course.

Children with RF-pos polyarthritis often followed a Severe Controlled course.

Severe Persistent course was observed in all JIA categories but infrequently in systemic JIA and oligoarthritis.

Table 1: Proportion of children in each JIA category stratified by disease course cluster. **Errata: Mild and Moderate columns transposed in the abstract.**

JIA Category	Mild	Moderate	Severe controlled	Severe Persistent
Oligoarthritis (n=228)	68.4	24.6	0.9	6.1
Polyarthritis RF-neg (n=130)	21.5	46.9	17.7	13.8
Enthesitis-related (n=81)	37.0	29.6	14.8	18.5
Systemic (n=47)	23.4	48.9	25.5	2.1
Psoriatic (n=38)	36.8	47.4	2.6	13.2
Polyarthritis RF-pos (n=26)	3.8	23.1	61.5	11.5
Undifferentiated (n=68)	38.2	29.4	8.8	23.5

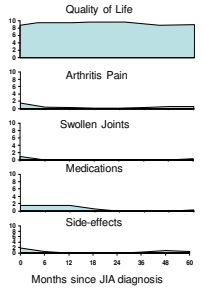
1. Mild Course

The most common course, seen in about 45% of children with JIA.

The disease responds quickly to simple treatments, but it comes back once or twice during the first five years after diagnosis, requiring re-initiation of those treatments.

Each flare involves a few swollen joints and mild pain. In between flares the child has essentially a normal life.

Median values are shown on the right.



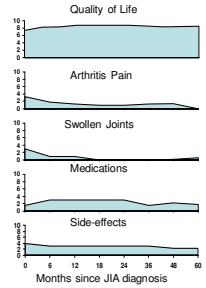
2. Moderate Course

The second most common course, seen in about 35% of children with JIA.

There is some initial impact on quality of life and mild to moderate pain with several swollen joints.

With relatively simple treatments the disease is eventually controlled and things normalize. There may be flares.

Median Values are shown on the right.



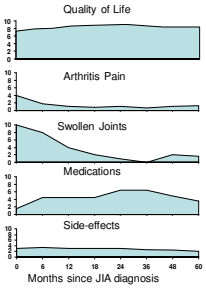
3. Severe Controlled Course

This course is rare, seen in about 10% of children with JIA.

There is a moderate initial impact on quality of life and moderate pain levels with many swollen joints at the beginning.

After receiving aggressive treatment, with some side effects, the disease is controlled, pain decreases and things tend to normalize

Median values are shown on the right.



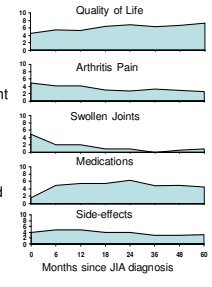
4. Severe Persistent Course

This course is rare, seen in about 10% of children with JIA.

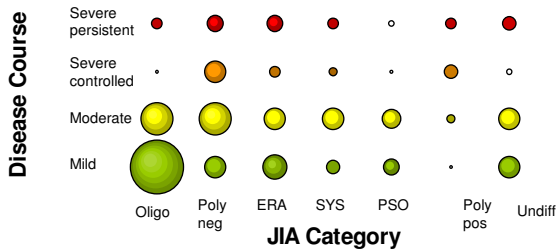
Multiple treatments are tried over the first five years after diagnosis and the child experiences frequent side-effects making it difficult to stay on treatment.

Despite these treatments, there are ongoing problems with some swollen joints, persistent pain and the child's quality of life is moderately affected.

Median values are shown on the right.



5. JIA Category and Disease Course



CONCLUSIONS

- Using patient-relevant variables the course of JIA can be described by four disease course groups.
- Two of them reflect a severe disease course, one that responded to treatment despite severe initial presentation and one with persisting impact on quality of life and pain despite moderate joint counts.
- There is an association between JIA category and disease course, but JIA category alone does not predict disease course.

REFERENCES: [1] Petty et al, J Rheumatol 2004;31:390-2. [2] Guzman et al, J Rheumatol 2014;41:2260-9. [3] Guzman et al, Annals Rheum Dis 2014, May 19. [4] Feldman et al, J Rheumatol 2000;27:226-33. [5] Duffy et al, J Rheumatol 1997;24:738-46.