Clusters of Autoinmune Diseases in Children

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Background

Autoimmune diseases (AIDs) have familial aggregation and frequently share a common genetic background, but few studies have evaluated autoimmune clusters in children with AIDs and their families.

Objective and hypotheses

To identify clusters of AIDs in children and their first-degree relatives.

Method

A cross-sectional study was performed in subjects with an AID of pediatric onset (< 18 years) recruited at Pediatric Endocrinology, Rheumatology, and Gastroenterology Clinics at the Health Network of the Pontificia Universidad Católica de Chile School of Medicine. Clusters of AIDs were identified by K-means cluster analysis.

Results

191 subjects with pediatric AIDs were included, of which 45 (24%) had polyautoimmunity. Mean age was 12.1 years (range 1-19) and 68% were female.

Most frequent AIDs were JIA (36%), AITD (25%), T1D (19%), uveitis (8%), celiac disease (6%), and vitiligo (6%).

Table 1. Clinical characteristics of patients with pediatric AIDs (n=191)

Age, years	**12,1 (1-19)**	
Female, %	**68 %**	
Polyautoimmunity	**45 (23.5%)**	
Autoimmune diseases	**n**	**Mean age of onset**
Juvenile idiopathic arthritis	68	8.2
Hashimoto thyroiditis	42	9.2
Diabetes Mellitus type I	37	7.4
Uveitis	15	8.6
Vitiligo	12	6.9
Celiac disease	12	5.7
Systemic Lupus Erythematosus	9	10.7
Localized scleroderma	8	8
Vasculitis	7	5.4
Graves disease	6	5
Dermatomyositis	6	5.7
Crohn's disease	4	9.2
Immunologic thrombocytopenic purpura	3	7.6
Psoriasis	3	10
Alopecia Areata	3	7
Ulcerative colitis	3	4
Autoimmune hepatitis	3	7.6
Sjögren syndrome	1	10

59% of subjects with pediatric autoimmunity had first-degree relatives with an AID.

Five clusters of AID were identified in families of children with autoimmunity (Table 2).

Among the 45 subjects with pediatric polyautoimmunity, four clusters of AIDs were identified (Table 2).

Table 2. A. Clusters of AIDs in patients and first-degree relatives (n=191).
B. Clusters of AIDs in patients with pediatric polyautoimmunty (n=45).

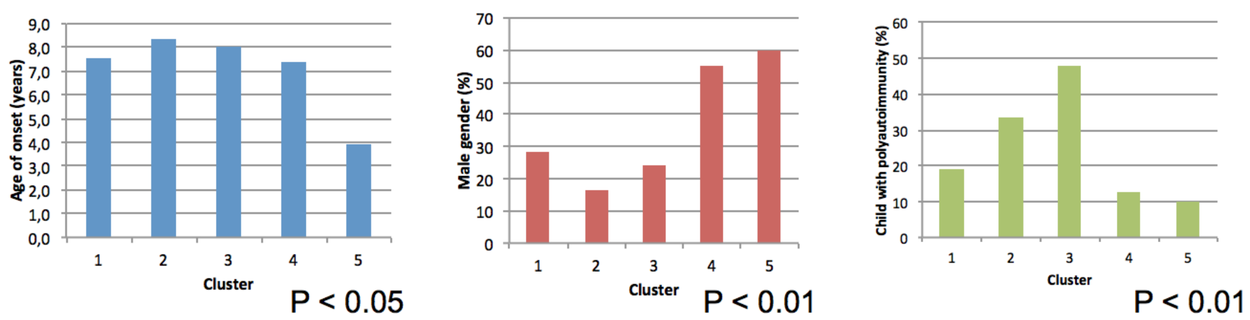
A.- Clusters of autoimmune diseases among children with autoimmunity and their first-degree relatives.

Cluster	Number of cases	Autoimmune diseases (Descending order of relevance)
1	94	Juvenile idiopathic arthritis Connective tissue diseases Autoimmune thyroid disease
2	29	Juvenile idiopathic arthritis Psoriasis Autoimmune thyroid disease
3	31	Type I diabetes Autoimmune thyroid disease Celiac disease Psoriasis
4	25	Autoimmune thyroid disease Type I diabetes Vitiligo Connective tissue diseases
5	10	Celiac disease Autoimmune thyroid disease Type I diabetes Autoimmune hepatitis Juvenile idiopathic arthritis

B.- Clusters of autoimmune diseases among children with pediatric polyautoimmunity.

Cluster	Number of cases	Autoimmune diseases (Descending order of relevance)
1	4	Connective tissue diseases Autoimmune thyroid disease Juvenile idiopathic arthritis
2	11	Type I diabetes Autoimmune thyroid disease Celiac disease Inflammatory bowel disease Immune thrombocytopenic purpura
3	10	Autoimmune thyroid disease Vitiligo Juvenile idiopathic arthritis Celiac disease Scleroderma
4	18	Juvenile idiopathic arthritis Uveitis Psoriasis Vitiligo Alopecia Areata Autoimmune Hepatitis

Figure 1. Differences between familial clusters in child's age of onset of AID (A), gender (B) and polyautoimmunity (C).



Conclusion

AIDs in affected children and their families may be grouped into well defined clusters suggesting a common etiopathogenesis among diseases grouped in each cluster .

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