Review Article

Pediatric rheumatic diseases: a review regarding the improvement of long-term prognosis and the transition to adults

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ABSTRACT

The pathology of rheumatic diseases and rheumatic diseases is systemic inflammatory disorders caused by autoinflammation and autoimmune responses, and a significant progress of inflammation science and rheumatology made diagnostic technique, a therapeutic drug, and therapy develop remarkably. On the contrary, in Japan, the regional disparities in the medical system are still large, and there are a lot of problems that should be solved. At first, regarding the solutions to such problems in pediatric rheumatic diseases, we need to investigate the actual situations and find the problems in specific regions; it is necessary to build medical care network taking regional characteristics in consideration in order to improve the medical quality in Japan. In addition, based on a long-term prospect, it is crucial to classify and manage each of problems surrounding patients, such as those on transitional care for chronic diseases, the cooperation with the parent association in Japan, and medical cost.

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1. Introduction

There are differences in a long-term prognosis according individual pediatric rheumatic diseases; there are a lot of factors that have not been clarified yet. Therefore, in this chapter, we mainly describe the conceptual and general information about pediatric rheumatic diseases, and each of the individual diseases will be dealt with in detailed expositions. Moreover, we listed the present and future issues on the transitional care from childhood to adulthood for your reference.

2. Present medical conditions of pediatric rheumatic diseases

Rheumatic diseases in children are considered to be incurable and intractable diseases still nowadays and meet the following four items: The pathogenic mechanism(s) has not been poorly understood; a treatment regimen has not been established yet; rare diseases; a long-term medical treatment is necessary [1]. The pathology of rheumatic diseases is systemic inflammatory disorders caused by autoinflammation and autoimmune responses; a significant progress of inflammation science and rheumatology made diagnostic technique, a therapeutic drug, and therapy develop remarkably. Thus, a good prognosis of the inflammatory conditions can be expected without carrying over organ damage until adulthood as far as the principle of early diagnosis and treatment intervention is kept. However, in Japan, the number of pediatric rheumatologists is as a few as 80 or so and the consolidation of health care has not been achieved. Therefore, introduction of advanced treatment in clinical practice is behind of its progress, and children having intractable diseases are placed in a predicament. Standardized diagnosis and treatment guidelines are now being established; however, it will take more time to spread and penetrate them throughout the nation. Thus, the inappropriate treatments, such as long-term administration of high-dose steroid and symptomatic treatment alone, are still continued. In addition, aggressive anti-inflammatory treatment and immunosuppressive therapies have not been sufficiently introduced in some regions in Japan. In such situation, children with connective tissue disease grow up to ‘transitional stage to adult’. It is not hard to imagine that they may face various new hardships.

3. Actual situation of pediatric rheumatic diseases

At first, we put the priority on understanding of the actual situations of patients with rheumatic diseases
in Japan in order to resolve present problems mentioned above. A nationwide survey was thus conducted according to the public welfare labor science study entitled ‘Study about the standardization of diagnostic criteria and disease severity classification and the development of evidence-based treatment guidelines for pediatric rheumatic diseases such as mainly juvenile idiopathic arthritis’ in 2015–2016 by a Health and Labor Sciences Research Grant in Japan. Specifically, a questionnaire survey was conducted on the number of patients of younger than 16 years or 16 years or older having main pediatric rheumatic diseases, such as juvenile idiopathic arthritis (JIA), systemic lupus erythematosus (SLE), juvenile dermatomyositis (JDM), and Sjögren syndrome (SS), who were treated or followed up in all the facility certified by Japan Pediatric Society. Since 91.3% as final response rate, an extremely high answer rate, was obtained on a nationwide survey, this result was considerably correct and reliable. Since the result was as follows: JIA 2454 (under 16-year-old, 1704; 16-year-old or elder, 750), childhood-onset SLE 929 (under 16-year-old, 404; 16-year-old or elder, 525), JDM 381 (under 16-year-old, 268; 16-year-old or elder, 113), childhood-onset SS 274 (under 16-year-old, 148; 16-year-old or elder, 126), total number of patients in each disease was JIA 2688, SLE 1018, JDM 417, and SS 300 in calculation.

Further analysis revealed that the number of institutions that treated 10 or more patients with pediatric rheumatic diseases regardless of age was 54 institutions in Japan.

The results indicated the possibility to construct nationwide regional-specific network for medical care of pediatric rheumatic diseases using these hospitals as one hospital in each prefecture that plays a role of ‘a local core hospital’ (detail of the results is under submission).

Moreover, although a long-term prognosis was conceptual and described partially in Japan so far, we will provide new findings on prognosis of individual pediatric rheumatic diseases soon by our energetic analysis results. We would like you have such new information in near future.

4. Issues related to pediatric rheumatic diseases in adulthood and their management

4.1. Medical cost aid for children patients under the current law

Among pediatric chronic diseases, patients with diseases that need long-term treatment and high medical cost can receive the medical cost aid and regional public health services using the system of ‘the revised measures against specific pediatric chronic diseases’ [1]. Since JIA was one of the specified pediatric chronic diseases for children under 18-year-old (20-year-old for already-certified children), pediatric patients are provided the aid for self-pay burden and daily necessities if they apply and obtain a certification. Since the limit of self-pay burden and health insurance system would be changed according to the region where they live in, refer the detailed information as described in the website of the information center for specific pediatric chronic diseases of Japan (http://www.shouman.jp/), each prefecture, designated city, or regional core city.

According to the partial revision of the intractable diseases law on 1 November 2015, only systemic-onset JIA was registered as a designated disease. Regardless of age, patients can be the potential candidates for the medical aid if they met the rule. On the other hand, the application for articular JIA was submitted to register as a third intractable disease, and it was approved finally on 17 January 2018. For detailed information, refer to the website of the Japan intractable diseases information center (http://www.nanbyou.or.jp/) and the homepage of each prefecture. Both of these systems need to be registered physicians described in each application when describing the application form.

4.2. ‘Proposal about the transitional care for patients with childhood-onset diseases’ in pediatric rheumatic diseases

In 2014, the Japan pediatric society published ‘Proposal about the transitional care medicine for patients with the childhood-onset diseases’ with the following main three items [2] (Figure 1). First, the statement of ‘Respect for right of self-determination’ is the indispensable premise for the medical care in adulthood. Regardless of age, the right of self-determination is the first step to establish the transitional care medicine that cultivates the
5. Future subjects in adulthood care
5.1. Present status of transitional care and future measures
As mentioned above, the medical care for pediatric rheumatic diseases has been progressed in recent 20 years dramatically, together with the increase in number of rheumatologists, it enables us to develop a medical system aiming at cure of the diseases by early diagnosis and treatment intervention. The emergence of novel immunosuppressants and biological preparations allows a paradigm shift from therapeutic system mainly depending on steroids to a therapeutic system that suppresses disease activity and reduces the dose of steroids for children patients as much as possible. As a result, the number of hospitalization due to recurrence or worsening of the disease is getting fewer; the adverse events with steroids and joint dysfunction caused by a disease are also decreased. Since the activity of daily life (ADL) is improved, patients are being able to live with pleasure. With progress of treatments, the quality of life (QOL) of patients with pediatric rheumatic diseases and their family is certainly raised [4].

However, there are some patients with pediatric rheumatic diseases who need medical treatment even in their adolescents and adult period. Taking JIA, a typical pediatric connective tissue disease for example, only 30% of pediatric patients with JIA achieve drug-free remission within 10 years after the onset; 70% of them grow up to adult with their disease and face the reality where medical heavily weighs them, because they are excluded from the subject of the medical cost aid system described above after becoming adult. In addition to recurrence of JIA, adverse events or complications during a long-term treatment and mental care of patients are also unavoidable issues.

We must not forget that the aim of transitional care is ‘treatment considering future of patients first’. Fortunately, patients with pediatric connective diseases are expected to be structurally linked to the Japan Rheumatism Association through the corresponding adult clinical department, the Department of Rheumatology. Thus, it is considered that they can smoothly and satisfyingly transit to adulthood care. Concerning the management of transitional care, it is crucial to construct the system that provides a whole-person care to every patient by discussing between the Departments of Pediatric Rheumatology and Adult Rheumatology. In the future, we will have to hold regular lecture meetings for physicians belonging to the both departments to spread common knowledge, improve cooperation, and follow up transitional cases. Thereby, we will have to continue basic and clinical studies on long-term clinical course of pediatric connective tissue disease and the difference between pediatric and adult onset diseases. These efforts may contribute to future generation.

5.2. Cooperation with the parent association
The Pediatric Rheumatology Association of Japan (PRAJ) strongly cooperates with ‘Asunaro-kai’, which is the parent association of JIA, regarding the transitional care for JIA patients. As a parent association for patients with rheumatic diseases other than JIA, ‘Kogenbyo tomono-kai’ (http://www.kougen.org/) develops a nationwide. We thus strongly cooperate with them as well.

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