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Effect of diet regime on a child with systemic lupus erythematous.

Youssef Salah Salem Abuelkheir

Department of Pediatric, Faculty of Physiotherapy, Cairo University, Egypt.

Abstract

Systemic Lupus Erythematous (SLE) is a chronic autoimmune disease that can involve any organ system, and may lead to significant morbidity and even mortality. In this article we review the epidemiology, common clinical features, complications of disease, and address the new available treatment idea. Further, we discuss important affection of the disease medically on children.

Review methods: The study was done on a patient with systemic lupus here age is 16 years old came to us with common clinical manifestation of the disease, here kidney and liver lab's value was abnormal and some skin symptoms was found so we start to restrict some types of food by taking general diet advices and start to look at the effect of diet therapy on the disease prognosis.

Conclusion: Noticed an improvement in both kidney and liver profile and disappearing of the butterfly rash, also here general blood test has improved including anemia, lymphocytes, liver enzymes, total protein in urine, C-Reactive protein, also their IGG value was reduced to normal level after their elevation.

Keywords: Diet, Children, Immunoglobulin.

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Abbreviations: SLE: Systemic Lupus Erythematous; IGG: Total Immunoglobulin; ALT: Alanine Transaminase; AST: Aspartate Aminotransferase

Introduction

Childhood-onset SLE is a rare disease with an incidence of 1 or less roughly per 100.000 children-years which is a very low incidence, higher frequency of the disease is reported in Asians, African American, Hispanics and native Americans [1].

Most studies report an age of onset of childhood systemic lupus between 11-12 years; the disease was rarely diagnosed before age of 5 years. As in adult onset SLE, approximately 80% of patients with childhood systemic lupus are female [2].

Diagnosis

SLE is called the great challenge, as the disease shares some characteristics with many other diseases. Especially when the classic butterfly rash is absent, diagnosing SLE can be a very hard to detect. However, there are some signs and a symptoms we can detect lupus with 4 or more of the American College of Rheumatology classification like Malar rash, Discoid rash, Serositis, Renal disorder, Neurological symptoms like seizure, photosensitivity and present of Antinuclear antibody [3].

Pathogenesis

The pathogenesis of lupus remains unclear although the concept of apoptosis goes some way to explaining how the immune system may act with the presence with the disease, intracellular antigens, Auto antigens are released by necrotic as well as apoptotic cells. Defects in the elimination of programme cell death found in SLE which may lead to activation of macrophage cell, T cell that turn on the abnormal immune reaction [4].

Common Clinical Features of SLE in Children

Arthralgia occurs in about 90% of all patients with SLE. Characteristically, it affects multiple joints symmetrically; there is no clinically significant arthritis in the affected joints. Muscles ache appears frequently. Muscle involvement has been reported in of SLE patients. However, myalgia, muscle weakness and tenderness, may be due to other causes rather than the disease itself.

Cutaneous lesions may occur in up to in SLE patients. The butterfly rash is erythematous found mainly over the prominent bones and across the bridge of the nose .Although

it is the best known skin lesion, it is one of numerous ways in which lupus manifests in skin increasing in C-Reactive protein as increasing in general inflammatory state of the body [5].

Lupus Nephritis

More than 70% of patients with SLE have renal involvement at some stage of their disease. Also an increase in total protein in urine which show a renal pathology [6].

The diseases was manifested by increasing the circulation immune complex elevating IGG value and their deposition n kidney causing glomuronephritis and increasing their mortality rate and suspectibility of having liver kidney syndrome.

The current treatment for SLE includes non-steroidal anti-inflammatory drugs, corticosteroids and cytotoxic immunosuppressive agents such ascyclophosphamide, methotrexate and mycophenolic acid. Those drugs are effective n treatment of lupus but they have lots of side effect as increasing in liver enzymes ALT and AST [7].

Hematologic Features

Decreasing in lymphocytes counts, anemia which may be normocytic or normochromic are common in child hood systemic lupus, with more than half of patients presenting signs [8].

Case Presentation

Patient was a 16 year Egyptian girl. She was treated with soulopred 30 mg/dl because of nephritis and immuran (Azathioprim) 100 mg as immunosuppressant drug. When the drug was tapered, she developed malar rash, significant proteinuria/hematuria decease in hemoglobin value. Increase in c. reactive protein, increase IGG value as increasing in immunity as a sign of the disease and also abnormal liver enzymes. She was administered by diet therapy without changing the drug doses her clinical and laboratory signs improved, performed 4 months after the initial investigation. At present, 4 months after the start of the administration of this therapy, she had great decrease of SLE signs and symptoms without therapy-related clinical toxicity.

Method of Treatment Intervention

Considering all favorable and unfavorable aspects of the major nutrients, it is safe to state that the adequate diet for the treatment of SLE is mainly aimed at reducing the risk for cardiovascular and atherosclerotic diseases, in addition to reducing the inflammatory factors and improving the immune function. Patients with SLE can benefit from a balanced diet for maintaining the ideal body weight, with effective calorie restriction to avoid insulin resistance and reduction of cholesterol level in the blood.

The patient with SLE should be instructed to follow a calorie-restricted diet reduce their Body mass index, in addition to food with a moderate protein content, Introducing both mono and polysaturated fatty acids as they contribute to the anti-inflammatory effect of diet to great extent, supplementation with omega 3 enhance anti-inflammatory reaction and restrict omega 6 because of their pro-inflammatory effects and aggravating effects for cardiovascular diseases.

Removing of all histaminic food as Foods high in histamine, like tomatoes, have been blamed for exacerbations of rheumatoid

Food Regime in Schedule Day One

Day 1:

Breakfast: Beans with bread made from corn

Lunch: Adass with the same bread

Dinner: Tuna

Cucumber and carrots with green salad

Fruits: Green apple

Day 2:

Breakfast: Chickpeas with bread made from corn

Lunch: Grilled chicken

Dinner: Tuna

Salad with meals is lettuce and cucumber

Fruits: Pineapple

Day 3:

Breakfast: Adass with corn bread

Lunch: Sauted vegetables

Dinner: Tuna

Salad with the 3 meals include cucumber carrots and lettuce

Day 4:

Breakfast launch and dinner are the same sauted vegetables excepts the forbidden list

Day 5:

Breakfast: Beans with non-glutin bread

Lunch: Grilled chicken

Dinner: Honey with corn bread

Salad cucumber and carrots

Fruits: Dates

Day 6:

Breakfast Adass with corn bread

Lunch: Sauted vegetables

Dinner: Tuna

Salad cucumber and carrots

Fruits: Green apple and pomegranate

Day 7:

The breakfast launch and dinner are the same beans with corn bread

Salad, cucumber and carrots

Fruits dates

Drinks in the 7 day are the same 1 cup of ginger

1 cup of green tea

Add honey instead of sugar

3 L of water add less than 10 g of bicarbonate to a cup of water and let the child drink it once a day

Results

The laboratory values are tabulated (Table 1).

Laboratory Findings

All laboratory values of a patient are surveyed by the same laboratory using the same methods.

1. Liver function
2. Blood values
3. C-Reactive protein
4. Total protein in urine
5. IGG
6. Hemoglobin value

Discussion

Systemic lupus has unknown cause although lots of theories had been established to clear that it remain not obvious enough ,few studies demonstrated the effect of genetic, environment and sedentary life style and lesser studied introduce the effect of diet on that disease but their investigation on humans and animals prove that even with small percent [9]. Excess Energy, most animal studies suggest that energy restriction modify autoimmune response and increases longevity [10]. Supplementation with simple carbohydrates, proteins, short-chain fatty acids, and vitamins causes a reduction in cholesterol level and has and anti-inflammatory effect. In fact, they has induced a reduction in the IL-10 serum level so modulating the immune response.so it prove the effectiveness of diet therapy on reducing c. reactive protein [11].

Improvement in lab finding as all as a one unit as lupus affect the whole body all the previous pretreatment finding was due to the general inflammatory state cause of the disease so application of diet therapy has an impact on inflammatory mediators, reducing c. reactive redness [12].

In fact increasing level with low density lipo protein is associated with increasing level of inflammation in the body [13]. Several of these foods are important sources of essential fatty acids that are involved in inflammatory processes. Higher intakes of the omega-3 fatty acids decreased markers of inflammation [14].

Adding diet rich in fiber shows better intestinal absorption and low glycemic index post prandial that leads to decreasing inflammation in the body as there was linear relation between hyperglycemia and inflammation [15]. Lupus children had an experience of increasing c. reactive protein which is linked with general state of inflammation in the body so maintaining suitable body weight has shown a prognosis on chronic inflammation [16]. Obesity has an increase in adipose tissue in the body which had proven to secrete macrophage which leads to activation of abnormal immune reaction so our law calorie diet reduce diseases severity which appears in disappearing of major rash [17].

Low cholesterol diets may also reduce inflammation in the body. One study found that a high cholesterol diet increased levels of C-reactive protein and serum amyloid, two main inflammatory markers [18].

Excessive protein intake causes a constant bone mineral loss in patients with juvenile SLE. On the other hand, the consumption of food restricted in protein diet has improved the glomerular filtration rate and kidney function so it prove the positive effect on kidney by reducing total protein in urine.

Although the negative effect on consuming high calorie diet as it is responsible for the abnormal lupus auto immunity it bay lead to abnormal glomerular filtration rate and elevate creatinine in blood hinder kidney and liver function this clear the reduction in liver enzymes [19].

Studies have shown that moderate-protein diet- had a better immune response with normal-protein diet- A diet with restriction of the amino acids phenylalanine and tyrosine was beneficial clearing the causes of the normalization of total immunoglobulin IGG.

It was proven that high carbohydrate low fat may modulate immune function and reduce inflammatory markers and cytokines, also play a role in reducing both interleukins-1 and -6 in addition to tumor necrosis factor [20].

The eicosapentaenoic and docosahexaenoic unsaturated fatty acids inhibit the enzyme lipoxygenase, reducing of inflammatory eicosanoids. The docosahexaenoic unsaturated fatty has a significant inhibitory action on the nuclear factor κB and TNF-α [21].

Docosahexaenoic unsaturated fatty significantly reduces the serum levels regulates IgG renal deposits and reduces IL-18 [22].

Higher level of homocysteine associated with systemic lupus needs an elimination of all histaminic food so our diet therapy which is free of this substance decreases diseases severity [23].

Some studies have suggested that iron can cause cell

Table 1. *Laboratory values*

Laboratory Value	ALT	AST	IGG	Hemoglobin	Total Protein in Urine (24 h)	C-Reactive Protein
Before	47	56	2445	8.5	1.2/3000 ml	2.4
After	35	34	1678	11.6	0.46/3000 ml	0.9

damages and that the use of it agents has shown to increase the abnormal autoimmune reaction so we did not use iron supplements in the study and depend in natural food sources which build a another step in explain our results as hemoglobin rise in this case [24].

Conclusion

Noticed an improvement in both kidney and liver profile and disappearing of the butterfly rash, also here general blood test has improved including anemia, lymphocytes, liver enzymes, total protein in urine, C-reactive protein, also their igg value was reduced to normal level after their elevation.

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Correspondence to:

Youssef Salah Salem Abuelkheir,
Pediatric Department,
Faculty of Physiotherapy,
Cairo University,
Egypt.
Tel: 00201229635944
E-mail: top-german-tank@outlook.com