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Background: The defeat of the cardiovascular system is considered a proven comorbid state in rheumatic diseases, including rheumatoid arthritis in adults. One of the markers of the cardiovascular failure formation is BNP, namely, its N-terminal inactive fragment (NT-proBNP76), which accumulates in specific granules of cardiomyocytes. Its diagnostic value increases with the appearance of minimally expressed symptoms. The long-term course of JIA is also characterized by changes in the state of the cardiovascular system, and there may be no visible clinical manifestations. For their diagnosis a 6-minute walk test is widely used, including in children.

Objectives: To study the content of NT-proBNP in patients with juvenile idiopathic arthritis and compare with the level of exercise tolerance.

Methods: 10 patients with JIA (9 girls, 1 boy), average age 12.78 ± 0.95 years, were examined. All children had a polyarticular RF negative subtype of JIA with a disease duration of more than three years (average disease duration 69.56 ± 17.07 months), received basic methotrexate therapy and did not have dysfunction of the lower extremities joints. The control group included 7 healthy children, comparable by sex, average age 14.25 ± 0.73 years. An ECG, an ultrasound scan of the heart, and a 6-minute walk test (6MTX) were carried out with determining the distance traveled (6MWD) and the increase in heart rate. The level of the N-terminal polypeptide of cerebral natriuretic hormone (B-type) (NT-proBNP) was determined in the morning, after waking up, and studied by competitive immunoassay on an IMMULITE 2000 analyzer ("Siemens").

Results: In children with JIA a decrease in myocardial contractility was not detected. Left ventricular ejection fraction ($62.17 \pm 0.83\%$ ($60.02 - 64.02$) versus $69.84 \pm 0.85\%$ ($62.3 - 80.3$), $p < 0.05$) in children with JIA were within normal limits, but significantly lower than in the control group. According to the results 6MTX indicator 6MWD in JIA-patients was 490.51 ± 11.40 m and in the control group 516.85 ± 8.84 m ($p < 0.05$) and heart rate growth was $27.75 \pm 2.30\%$ versus in the control group ($37.38 \pm 3.86\%$), $p < 0.05$. A negative correlation between the increase in heart rate and the duration of the disease was found ($r = -0.7$, $p = 0.05$). The level of NT-proBNP in patients with JIA was within physiological values and amounted to 47.5 ± 14.09 pg / ml ($20 - 128$ pg / ml), but this was higher than in children of the control group (20.29 ± 0.29 pg / ml ($20-22$ pg/ml), $p < 0.05$). A high correlation was found between 6 MWD and NT-proBNP level ($r = 0.8$, $p < 0.03$).

Conclusion: In children with JIA there is a decrease of the exercise tolerance that increases with the duration of JIA on the background of preserved myocardial contractility. This is accompanied by a higher basal NT-proBNP level than in healthy children.

Disclosure of Interests: None declared

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AB0987

STUDY ON THE FACTORS AFFECTING THE FINAL ADULT HEIGHT IN JUVENILE IDIOPATHIC ARTHRITIS

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Background: Juvenile idiopathic arthritis (JIA), a chronic inflammatory disease involving limited joints and/or constitutional symptoms in childhood or adolescent, might affect body height and result in short stature in adulthood. Well-controlled disease activity is beneficial in improving growth impairment in JIA patient.

Objectives: To identify any factors that influence final adult height in the patient with juvenile idiopathic arthritis.

Methods: We retrospectively reviewed the medical records of JIA patients between 2009 to 2019 in National Taiwan University Hospital. The diagnosis of JIA was according to the International League of Associations for Rheumatology (ILAR) criteria. Personal history, laboratory reports, and medication were analyzed. The difference between final adult height and target height was calculated in each patient. We defined whose final adult height higher than target height as positive group and the others as negative group. A cox univariate proportional hazards model was applied to compare the variables between these two groups.

Results: Total 120 patients are collected. There are 74 (61.7%) and 46 (38.3%) cases in the positive and the negative group, respectively. The mean onset age of disease is 11.78 ± 3.78 in positive group and 10.83 ± 4.04 in negative group. Male is more than female in both groups, with a ratio of 1.7:1 and 2.7:1 respectively. Enthesis-related arthritis accounted for the most in positive group, however, in negative group, oligo-arthritis was the most common type. There are slightly more patients having received biologics in positive group than negative group without significance (64.8% vs. 54.3%, $p=0.33$). Among the patients treated with etanercept, those in the negative group had a significantly younger age when they started the treatment compare to the positive group (11.83 ± 1 vs. 13.9 ± 3.1 , $P = 0.01$). The patients in positive group had significantly higher final adult

height (171.08 ± 7.1 vs. 162.9 ± 8.1 , $P < 0.001$). The univariate analysis showed that the age when etanercept treatment started was associated with the occurrence of a negative difference between final height and target height (odds ratio=0.80, 95%CI=0.67-0.96, $P=0.02$).

Conclusion: In JIA patients, 38.3% of them had a negative difference between final adult height and target height. The subtype might play a critical role in affecting the growth of patients. A younger age when the child received etanercept was associated with a lower attained adult height than target height, however, it needs further analysis on the medication of these children.

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AB0988

CLINICAL FEATURES AND ANALYSIS OF MEFV GENE IN 31 PATIENTS WITH FAMILIAL MEDITERRANEAN FEVER (FMF)

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Background: FMF is recessive systemic autoinflammatory disorder characterized by recurrent fever, peritonitis, pleuritis, pericarditis and arthritis accompanied with headache and abdominal pain. Mutation of MEFV gene encoding pyrin resulted in inflammasome activation and the uncontrolled production of IL-1 β . Overview of pathogenesis, clinical features and management in Japanese patients with FMF had been reported. However, the differences of clinical features between mutated and non-mutated of MEFV still remain unclear.

Objectives: We have analyzed 31 Japanese patients with FMF in Gifu district to clarify the association between various clinical features and mutation of MEFV.

Methods: Genomic DNA were purified from white blood cells in 31 FMF patients, and mutated MEFV has been explored. We have analyzed MEFV, TNFRSF1A, MVK and NLRP3 genes in 31 patients with FMF except for 1 patient. Therefore, we excluded another autoinflammatory diseases such as TNF receptor-associated syndrome (TRAPS), mevalonate kinase deficiency and cryopyrin-associated periodic syndrome. Clinical symptoms and laboratory data were analyzed around onset time. Each patient had been treated with colchicine (0.5-2 mg).

Results: Characteristics of Patients with FMF (22 female/9 male) were as follows; Onset time were 0-56 years-old (21.4 ± 11.8), and Frequencies of clinical symptoms such as periodic fever, headache, abdominal pain, arthralgia, chest pain, cervical lymph nodes swelling, and myalgia were 31/31, 9/31, 8/31, 6/31, 5/31, 3/31 and 1/31, respectively (double symptoms were observed). Patients with FMF were divided into 3 groups as follows; Patients with typical compound heterozygous mutations of MEFV (E148Q /M694I) which indicated exon 10 mutation, were 5 cases (G1). Patients with atypical mutations, except for exon 10, such as 133G>A in 3'UTR, exon 1 (E84K), 2 (L110P, E148Q), 3(R202Q, P257L, G304R, P369S, R408Q), 5(S503C) and 9(I591M) were 13 cases (G2). Patients with no mutations in MEFV gene were 12 cases (G3). There were no significant differences of age at first visiting hospital (FV) and onset age of fever attack (O) (FV: 29.0 ± 15.6 , 27.1 ± 12.5 years-old (yo) and 34.7 ± 12.7 yo, O: 21.0 ± 17.6 yo, 17.8 ± 12.1 yo and 25.2 ± 6.5). But significant differences in duration of fever attack (D) and frequency of fever attack (FF) between G1 and G2 or G3 were observed as follows; (D: 2.2 ± 0.4 days vs 5.5 ± 3.1 days, $P < 0.05$, and 3.8 ± 1.7 days), FF: $0.72 \pm 0.3/$

month (M), $1.24 \pm 1.1/\text{M}$, and $1.5 \pm 0.7/\text{M}$ vs group1, $P<0.05$), respectively. Laboratory examinations such as WBC, CRP and serum amyloid A (SAA) at fever attack were not significantly different between 3 groups. All of those patients were effective for colchicine treatment except for 2 patients in group 1 because of loss of hair, severe diarrhea and liver dysfunction due to side effects of colchicine. Finally, 4 patients in G1and G2 received canakinumab treatment. Patients with *MEFV* mutations have no family histories. Mutations of E148Q were found in 12 patients (40%).

Conclusion: We have examined association between clinical features and mutations of *MEFV* in 31 patients in Gifu district, suggesting that duration of fever attacks and frequency of fever attacks in G1 are significantly shorter than G2 and G3, respectively in Japanese patients with FMF. Mutations of E148Q in exon 2 were observed in 16-23 % of normal Japanese patients, indicating that E148Q is the polymorphism or accelerating factor.

Disclosure of Interests: None declared

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AB0989

TUBERCULOSIS RISK IN CHILDREN WITH RHEUMATIC DISEASES TREATED WITH BIOLOGIC DISEASE MODIFYING ANTI-RHEUMATIC DRUGS

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Background: Chronic rheumatic diseases entail the use of biologics in children. Immunosuppressive effects of drug therapy put children at risk of various infections. Tuberculosis (TB) is a leading chronic infection in certain parts of the world. Recent estimates suggest the prevalence of TB in India to be 3.2 cases per thousand population¹.

Objectives: Thus we reviewed the prevalence of Tuberculosis amongst children with various rheumatic disorders treated with different biologics.

Methods: The search strategy for writing review articles proposed by Gasparyan et al². was followed. Articles available on MEDLINE and Scopus, published on or after January 1, 2010 to 1 October 2019, were reviewed. (Figure 1) Details on Tuberculosis and disease variables were collected (Table 1).

Table 1. Data extraction form

Data extraction form
Drug
Study characteristics
Country of study
Type of study
Year
Author
DOI
Outcomes reported
Number of participants
Total number of Tuberculosis reported
Disease variable
Disease or type of JIA (PA-RF+, PA-RF-, OA, OA extended, ERA, jspA, SJIA, PsA, Undifferentiated, only uveitis)
Duration of JIA before biologics (Median, IQR)
Duration of follow-up (Median)
Exposure in patient years
Infectious events
Total no of infection events
Major/ serious Infections- Number of events
Opportunistic infections
Minor Infections- Number of events
Treatment received
Biologic Doses received
Duration of biologic treatment
Concomitant drugs
Steroids
Other

Figure 1. Number of articles obtained after searching through MEDLIEN and Scopus.

Results: Data on infections in children with rheumatic disorders on biologics is scant (Table 2, Figure 2A). Tuberculosis was reported on occasion (0-5 cases per country) in the developed world with the highest Tuberculosis reports being from Turkey (Figure 2B). There is particular paucity of data from regions with highest number of incident cases or prevalence of tuberculosis more than 100 per 10 000 population (figure 2C, D).

Table 2. Summary of data on tuberculosis in paediatric rheumatology with various biologics

	JIA	Lupus	Myositis	Autoinflammatory syndromes	Vasculitis
Infliximab	783(A) 547(B)	0	0	0	10(C)9(B)
Adalimumab	2925 (A) 489(B)	0	0	0	1(B)11(C)
Etanercept	6974 (A) 2019(B)	0	0	0	1(C)
Certolizumab	37 (A)0(B)	0	0	0	0
Golimumab	224 (A) 3(B)	0	0	0	0
Rituximab	107 (A) 51(B)	75(B)	48(E) 185(C)	0	3(C)
Belimumab	0(A) 0(B)	39(B)	0	0	0
Anakinra	471 (A) 63(B)	0	0	29(A) 27(B)1(D)	0
Canakinumab	196 (A)	0	0	4(A)109(E)	0
Tocilizumab	998 (A)	0	0	0	2 (B) 9(C)
Abatacept	521 (A)	0	0	0	0
Combination of anti TNFs	3(A)	0	0	0	0

A: Registry data, B: Cohort, C: Case series, D: Anecdotal reports E. Trials