MAEDICA – a Journal of Clinical Medicine
2021; 16(2): 211-215
https://doi.org/10.26574/maedica.2021.16.2.211

MÆDICA - a Journal of Clinical Medicine

ORIGINAL PAPER

Quality of Life in Children with Juvenile Idiopathic Arthritis

Lucia Maria SUR[a, b], Gabriel SAMASCA[a, b], Remus GAGA[a, b], Genel SUR[a, b], Cornel ALDEA[a, b], Calin LAZAR[a, b]

[a]"Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, Romania

[b]Emergency Clinical Hospital for Children, Cluj-Napoca, Romania

ABSTRACT

Background: *The depressive syndrome is commonly found in children suffering from chronic diseases, which is also present in patients with juvenile idiopathic arthritis (JIA).*

Objective: *This study proposed to analyze depression's incidence in children with JIA. We also monitored the evolution of depression with the improvement of the disease under treatment.*

Materials and methods: *We followed 145 patients suffering from JIA according to ILAR and Edmonton classification in 2001. The study was conducted over three years between 2015 and 2017. The assessment of depression was made using the Hamilton scale adapted for children by us. This scale consists of 11 fields with multiple questions, the evaluation was made by counting the score. The scale assesses overall depression intensity. It has a maximum score of 28 points, and one with eight points defines depression.*

Results: *The results obtained using the Hamilton scale showed that, from the total of 145 patients suffering from JIA, 35 (24%) experienced mild depression, 10 (7%) moderate depression and 26 were borderline; 74 children did not experience the depressive syndrome. In the control group, depression was found in only 5% of subjects. After administering the most appropriate treatment, symptoms of depression have been improved and the depression score has decreased.*

Conclusions: *The Hamilton questionnaire adapted for children is easy to apply and it is an important tool for assessing depression. Depression has been present in one-third of patients with JIA selected for this study. The symptoms of depression have been correlated with disease activity. Depression does not influence the disease, but the disease induces depression.*

Keywords: depression, children, juvenile idiopathic arthritis, the Hamilton questionnaire.

INTRODUCTION

Juvenile idiopathic arthritis (JIA) is a heterogeneous group of chronic disorders characterized by the occurrence of immune-mediated inflammation in the joints and connective tissue with a duration longer than six weeks (1). The worldwide prevalence of JIA is around 1-2 in 1 000 children. Juvenile idiopathic arthritis has an undulant evolution with periods of exacerbation and remission. Some children may have symptoms only for a few months due to a good response to treatment, but others may have symptoms throughout their entire lives (2). The disease itself causes pain, physical limitations and ultimately depression. These manifestations can lead to the perception of a

Address for correspondence:
Gabriel Samasca
"Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Crisan Street, 3-5 No, Cluj, 400012, Romania
Email: Gabriel.Samasca@gmail.com

Article received on the 18th of March and accepted for publication on the 29th of June 2021

modified body image, anxiety, fear of not being socially acceptable, and anxiety about the evolution of the disease and the response to treatment that may affect their future (3, 4). This condition requires frequent visits to the doctor, reduces free time due to disease manifestations and therapeutic measures, and leads to limiting daily activity. These manifestations can also affect the family who may experience depression (5). There may occur adaptation issues for the child and also for the family.

Children with exacerbation of the disease may become irritable and experience regression of behavior, loss of appetite, weight loss and communication difficulties (6). It has been observed that children with JIA are more likely to develop sleep disorders that may have consequences on their behavior and psychology and ultimately may lead to fatigue with decreased physical performance and altered mood (7, 8). All above mentioned issues can eventually lead to depression that can be correlated with disease progression. No unitary studies have been used to define child depression and can provide defining elements of depression (9, 10). Until now, there are no unitary studies to offer definitory elements of depression to diagnose the form of depression in children. To not falsify the results, in general, the assessment of depressive manifestations should be made during the remission periods, because some symptoms of depression may be directly related to exacerbations of the disease. Many studies have shown that affective disorders in childhood may predict the recurrence of depressive episodes (11). Behavioral problems can negatively affect school performance in children with JIA (12). Until now, there has not been presented a study to analyze the issue of depression in children with JIA. Hamilton scale, which represents the gold standard in adults assessment, may become an effective tool for assessing depression in children after a reliable adaptation.

This disease has an unpredictable evolution. Some children may have symptoms for several months, others will suffer from the disease all their lives. Regarding severity, there are also many differences. Some forms have a mild evolution, being controlled by treatment, but some forms have no therapy response. Children with JIA present more often anxiety, depression, introversion, somatic disorders, aggressive behaviors, and issues of thinking and social problems, at a significantly higher rate than control groups (13, 14). ❑

MATERIAL AND METHODS

We included in the study 145 children diagnosed with JIA aged between 8-18 years. They were followed in the "Pediatrics II" Clinic in Cluj-Napoca for a period of three years, from January 2015 to December 2017. The inclusion criteria were stipulated by ILAR, in which the morning pain and stiffness of over six months, swelling, and depending on the forms of clenching, fever and joint activity in the systemic and depending on the number of joints oligoarticular damage (up to four joints), polyarticular (over four joints). Recent studies have confirmed that transition between oligo and polyarticular forms was not possible. Children with manifestations of active JIA, fever, serositis, splenomegaly, lymphadenopathies and uveitis were not included in the study. The control group included 20 children without associated diseases and whose age and sex distribution were comparable to those in the study cohort. The study was approved by the Commission of Ethics of "Iuliu Hatieganu" University of Medicine and Pharmacy in Cluj-Napoca, Romania. The parents and children who participated in the study gave their written informed consent.

Patients had different forms of the disease, established according to the ILAR criteria – 59 children with oligoarticular JIA (40 girls, 19 boys, with a medium age of 12+/-4.3 years, age range 5-18 years, duration of disease between 2-15 years), 45 children with polyarticular JIA, out of which 16 with positive rheumatoid factor and 29 with negative rheumatoid factor (29 girls, 16 boys, medium age of 13.2 years, age range between 6-18 years, duration of disease between 0.5-11 years), 35 children with systemic JIA (19 girls, 16 boys, medium age of 12.5 years, age range between 5-18 years, duration of disease between 2-16 years), three children with arthritis with enthesitis (two girls aged eight and nine years, and one boy aged eight) and three children with arthritis with psoriasis (two girls aged 16 and 18 years, and one boy aged 14). Out of the 145 patients, 90 were females (62.22%).

Patient evaluation

The selected patients were evaluated by two pediatricians with competence in rheumatology, to identify the state of the disease. Articulations and their mobility as well as serological markers – CRP and ESR – have been evaluated too. Their eyes were also examined to identify the possible ophthalmological disorders (uveitis). Furthermore, hepatosplenomegaly and lymphadenopathies were investigated.

To evaluate the depressive state, we used the Hamilton scale. This scale represents the gold standard for adults with depression, and its adaptation for children provides interesting and quantifiable data. The adapted scale analyses 11 domains, with several questions for each domain, and according to the intensity of the manifestations, they are awarded points between 0-4. The 11 domains of interest include the depressive state, feelings of guilt, insomnia, work and activities, decrease of the ideational level, agitation, mental anxiety, somatic anxiety, gastrointestinal somatic symptoms, and weight-loss. This scale is a global indicator of depressive syndrome and evaluates the cognitive, somatic and behavioral components. It was simplified in order to be applicable to children as well. The children could fill in the answers to questions directly on the questionnaire, or the answers could be filled in by the doctor after the interview. The final score established whether the children are in the depression range or not. The maximum score is 28 points, while the score of 8 signifies the presence of depression. For the final score, it is enough to sum the scores obtained for each of the domains. The functional analysis highlights three main factors: apathy or retardation, somatic symptoms and anxiety.

The depressive state was characterized by a lack of interest, sadness, lack of ideals. Those with a depressive state cry easily. ❑

RESULTS

The 26 borderline patients have each met a maximum of seven points. In the mild form, the main symptoms in children include insomnia, agitation, and mental and somatic anxiety. The patients with a moderate form of disease meet almost all the investigated symptoms (Table 1).

By applying the Hamilton questionnaire modified for children to the studied cohort, we obtained the following results: children with JIA without depression – 74 (51%), with mild depression – 35 (24%), moderate depression – 10 (7%) and borderline – 26 (18%).

TABLE 1. Patients' distribution according to the aspects evaluated in depression

Depression	0	5	3
Guiltiness	0	6	2
Insomnia	8	11	3
Work+activities	0	3	2
Ideational level	0	0	0
Agitation	3	11	3
Mental anxiety	8	11	3
Somatic anxiety	11	8	3
Gastrointestinal somatic simptoms	6	11	3
General somatic simptoms	6	8	1
Weight-loss	0	5	1

The witness cohort, made up of 20 children with ages between 8-18 years, showed the following results: 5% of the cohort showed mild depression, with a score of eight points. It should be mentioned that in the witness cohort there were also subjects with anxiety, agitation, and somatic disorders, but which have not met the criteria for depression. ❑

DISCUSSION

A study presented by EULAR in 2016 confirmed that depression in patients with JIA was very well correlated with the activity of the disease (3). From this point of view, this authority recommends that children suffering from JIA should have psychological support. It is also known that the evolution of this rheumatic disease is variable with periods of activity and remission. Previous studies showed that 70% of children diagnosed with JIA were still presenting with disabilities and activity limitations. Laura Hans found in a prospective study that children with JIA have important depression symptoms.

Studies have also showed that most of depression symptoms were present in children with multiple inflamed articulations, or which limit movements. Treating these manifestations of JIA helps in ameliorating depression symptoms as well. Depression prevalence studies show figures

lower than half in the general population compared to the population with JIA (15, 16).

In the present study, signs of the mild form of depression were found in 24% of patients, and those of the moderate form in 7%. Some patients did not meet a score high enough for the mild form, so they were considered borderline. Out of these, a high percentage will end up with no symptoms, and some of them will evolve to a mild form. The questionnaire allowed for an objective evaluation of symptoms because children ticked all symptoms they thought they had. This questionnaire adapted for children has the advantage of being easy to fill, and data interpretation is made by summing the points in each group of symptoms.

There were other studies made on subjects from Iran and Turkey, which showed a higher prevalence of depression among patients with JIA than in our cohort (2, 4). The symptoms that were most frequently met in this study included insomnia, agitation, gastrointestinal somatic symptoms and mental anxiety. The loss of work capacity and loss of activity was met only in two cases with the moderate form. The ideation level was not affected by the investigated children. The feeling of guilt was met in half of the children with a mild form of depression. Wight-loss was not a dominant symptom, possibly because, despite the appetite alterations, they continued to eat and maintained their weight (18). Weight gain was seen in patients who were receiving Prednisone, a drug which is known for its potential to cause increased appetite.

It can also be observed that depression comes as a result of JIA symptoms, and it is not influencing the evolution of the disease. This explains why depression is twice or more frequent in these patients compared to the general population. By applying the right treatment, with the disappearance and improvement of symptoms, depression score decreases. It would be interesting to further explore if symptom disappearance after using the right treatment leads to the disappearance of depression. However, some children inherited a genetic predisposition to depression, which would probably still present the constitutional elements of the depressive syndrome. A study made on young students in the USA showed that elements of the depressive syndrome can be met in up to 70% of students during their university years. In this human-difficulties-stress battle, every time tension factors are expressed, they can lead to depressive syndromes. It is important to recognize and eliminate those elements that can disturb the mental equilibrium and which can perpetuate the syndrome of depression (19, 20). About 10% of JIA cases do not meet the admission criteria in a group according to international data, and for this reason The Pediatric International Trials Organization proposed to revise the criteria for JIA in 2015 and admitted that there were four JIA groups. More accurate classification of patients with JIA may lead to better outcomes in the therapy of depression and the disease itself (21-23). ❑

CONCLUSION

The Hamilton questionnaire adapted for children is easy to apply, its completion takes only a few minutes, requires checking the answers which are considered true and it is an important tool for assessing depression. Depression has been present in one-third of JIA patients investigated by us. Depression symptoms have been exacerbated with the disease activity. Depression is consistent with the severity of manifestations and influences adherence to treatment, but the disease induces depression. ❑

Conflicts of interest: none declared.
Financial support: none declared.

References

1. **Ringold S, Ward TM, Wallace CA.** Disease Activity and Fatigue in Juvenile Idiopathic Arthritis. *Arthritis Care Res* (Hoboken) 2013;65:391-397.
2. **Memari AH, Chanamara E, Ziaee V, et al.** Behavioral problems in juvenile idiopathic artrhritis: a controlled study to examine the risk of psychopathology in a chronic pediatric disorder. *Int J Chronic Dis* 2016;2016:5726236.
3. **EULAR.** Depression linked to disease activity and disability in adolescents with arthritis. 2016.
4. **Erdogdu E, Kasapcopur O, Cimen G, et al.** Depression, anxiety and pain in juvenile idiopathic arthritis. *Pediatr Rheumatol Online J* 2008;6:P175.
5. **Rathbun AM, Reed GW, Harrold LR.** The temporal relationship between depression and rheumatoid arthritis disease activity, treatment persistence and response: a systematic review. *Rheumatology* (Oxford) 2013;52:1785-1794.
6. **Margaretten M, Julian L, Katz P, Yelin E.**

Depression in patients with rheumatoid arthritis: description, causes and mechanisms.
Int J Clin Rheumtol 2011:6:617-623.

7. **Ward TM, Archbold K, Lentz M, et al.** Sleep disturbance, daytime sleepiness, and neurocognitive performance in children with juvenile idiopathic arthritis. *Sleep* 2010;33:252-259.
8. **Butbul Aviel Y, Stremler R, Benseler SM, et al.** Sleep and fatigue and the relationship to pain, disease activity and quality of life in juvenile idiopathic arthritis and juvenile dermatomyositis. *Rheumatology* (Oxford) 2011;50:2051-2060.
9. **Angold A, Costello EJ, Messer SC, et al.** Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research* 1995;5:237-249.
10. **Williams JB.** A Structured Interview Guide for the Hamilton Depression Rating Scale. *Arch Gen Psychiatry* 1988;45:742-747.
11. **Pinquart M, Shen Y.** Depressive symptoms in children and adolescents with chronic physical illness: an updated meta-analysis. *J Pediatr Psychol* 2011;36:375-384.
12. **Pinquart M.** Self-esteem of children and adolescents with chronic illness: a meta-analysis. *Child Care Health Dev* 2013;39:153-161.
13. **Lundberg V, Lindh V, Eriksson C, et al.** Health-related quality of life in girls and boys with juvenile idiopathic arthritis: self- and parental reports in a cross-sectional study. *Pediatr Rheumatol Online J* 2012;10:33.
14. **Forgeron P, King S, Stinson JN, et al.** Social Functioning and Peer Relationships in Children and Adolescents with Chronic Pain: A Systematic Review. *Pain Res Manag* 2010;15:27-41.
15. **Karp AD.** *Speaking of Sadness: Depression, Disconnection, and the Meanings of Illness.* 2017.
16. **Bonin L, Moreland S.** Overview of prevention and treatment for pediatric depression. UpToDat*e* 2017 https://www.uptodate.com
17. **Gilbert P.** Pediatric Depression: The evolution of powerlessness. 2017.
18. **Caglar D.** Evaluation of weight loss in infants over six months of age, children, and adolescents. UpToDate 2017 https://www.uptodate.com
19. **Miller AH, Raison CL.** The role of inflammation in depression: from evolutionary imperative to modern treatment target. *Nat Rev Immunol* 2016;16:22-34.
20. **Chauffier K, Salliot C, Berenbaum F, et al.** Effect of biotherapies on fatigue in rheumatoid arthritis: a systematic review of the literature and meta-analysis. *Rheumatology* (Oxford) 2012;51:60 -68.
21. **Ashournia P, Sadeghi P, Rezaei N, et al.** Prevalence of Family History of Autoimmune Disorders in Juvenile Systemic Lupus Erythematosus. *Maedica* (Bucur) 2018;1:21-24. PMID: 29868136; PMCID: PMC5972782.
22. **Sur LM, Gaga R, Duca E, et al.** Different Chronic Disorders That Fall within the Term Juvenile Idiopathic Arthritis. *Life* (Basel) 2021;5:398. doi: 10.3390/life11050398. PMID: 33925491; PMCID: PMC8146979.
23. **Rigas HM, Bucur S, Ciurduc DM, et al.** Psychological Stress and Depression in Psoriasis Patients - a Dermatologist's Perspective. *Maedica* (Bucur) 2019;3:287-291. doi: 10.26574/maedica.2019.14.3.287. PMID: 31798747; PMCID: PMC6861725.