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УДК 612.284.2:616.89-008.47-053.2

БАЛАЛАРДАҒЫ ЗЕЙІН ТАПШЫЛЫҒЫ СИНДРОМЫНДАҒЫ ҰЙҚЫ АПНОЭЫНЫҢ ЖИІЛІГІ

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Түйіндеме

Бұл жұмыстың мақсаты зейін тапшылығы бұзылған (ЗТБ) балалар популяциясындағы ұйқы апноэ синдромының (ҰАС) жиілігін анықтау болды. *Материалдар мен тәсілдер*. Зерттеу екі жыл бойына ретроспективті болып табылады және бөлімшеде ЗТБ диагнозы қойылған барлық балалардың жазбаларына бағытталған. 156 файл талданды. Орташа жас 10,7 жас, стандартты ауытқу 2,45 жас. Жынысы бойынша бөлу: 40 қыз және 116 ұл. *Нәтижелер.* Ұйқының бұзылуы 38 жағдайда (24,3%) анықталды, бұл негізінен ЗТБ балалардың 17,3% -ында болатын ҰАС (71%) болды. *Талқылау, қорытындылау.* Басқа зерттеулермен салыстырғанда, біздің зерттеуіміз ЗТБ балалардағы ұйқының бұзылуын анықтау үшін сауалнаманың сезімталдығының жоқтығын және ЗТБ кезінде ҰАС анықтау ақауын көрсетеді. Сауалнамалардың сезімталдығы мен спецификасының жоғарылауымен ЗТБ кез келген балаға жүйелі полисомнографияны жүргізген жөн.

Түйінді сөздер: зейін тапшылығының бұзылуы, ұйқы апноэ синдромы, балалар.

ЧАСТОТА СИНДРОМОВ АПНОЭ ВО СНЕ ПРИ СИНДРОМЕ ДЕФИЦИТА ВНИМАНИЯ У ДЕТЕЙ

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Резюме

Целью данной работы было определение частоты синдрома апноэ во сне (САС) в популяции детей с синдромом дефицита внимания (СДВ). *Материалы и методы*. Исследование является ретроспективным в течение двух лет и фокусируется на записях всех детей, у которых был диагностирован СДВ в отделении. Было проанализировано 156 файлов. Средний возраст составляет 10,7 лет со стандартным отклонением 2,45 года. Распределение по полу: 40 девочек и 116 мальчиков. *Результаты*. Нарушения сна были выявлены в 38 случаях (24,3%), в основном состоящие из САС (71%), который присутствует у 17,3% детей с СДВ. *Обсуждение, заключение*. По сравнению с другими исследованиями наше исследование показывает недостаточную чувствительность опроса для

выявления нарушений сна у детей с СДВ и дефект выявления САС при СДВ. Было бы желательно проводить систематическую полисомнографию у любого ребенка с СДВ, подкрепленную улучшенной чувствительностью и специфичностью опросников.

Ключевые слова: синдром дефицита внимания, синдром апноэ во сне, дети.

FREQUENCY OF SLEEP APNEA SYNDROMES IN CHILDREN WITH ATTENTION DEFICIT DISORDER

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Abstract

The objective of this work was to determine the frequency of Sleep Apnea Syndrome (SAS) in a population of children with Attention Deficit Disorder (ADD). *Materials and methods* The study is retrospective over two years and focuses on the records of all children who were diagnosed with ADD in the department. 156 files were analyzed. The average age is 10.7 years with a standard deviation of 2.45 years. The gender distribution is 40 girls and 116 boys. *Results* Sleep disorders were detected in 38 cases (24.3%), mostly consisting of SAS (71%), which is present in 17.3% of children with ADD. *Discussion, conclusion* Compared to other studies, ours shows an insufficient sensitivity of questioning for the detection of sleep disorders in children with ADD, and a defect in the detection of SAS in ADD. Systematic polysomnography in any child with ADD would be desirable, supported by improved sensitivity and specificity of the questionnaires.

Keywords: Attention deficit disorder, sleep apnea syndrome, children.

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Introduction

The ODYSSEOS department is a Neurological Day Rehabilitation service specialized in the diagnosis and rehabilitation of Attention Deficit Disorder (ADD) in children. The diagnostic assessment includes an assessment by a neuropsychologist of psychometrics (WISC V) and attention (TEACH), with a study of the impact of the disorder on autonomy, graphic design and physical and sports activities, carried out respectively by a special education teacher, an ergotherapist and a teacher of adapted physical activities.

The department is aware of the fact that sleep disorders can be present in children with ADD, and aggravate it as described in the literature [1].

Children referred for exploration of attentional difficulties in the ODYSSEOS Service and suspected of sleep disorders are therefore referred to the Sleep Unit as part of an organized care system.

This Sleep Unit specialises in the detection of sleep disorders in children. It is equipped with a SEFAM polysomnography device to record sleep during a Night Hospitalization, and is thus able to detect Sleep Apnea Syndromes in children. The doctor in charge works as part of a network with ENT surgeons exploring and treating nasopharyngeal obstructions or allergic phenomena, paediatricians who can also improve allergies but also overweight, speech therapists who practice oromaxillolingual rehabilitation and orthodontists who can correct maxillofacial malformations.

Childhood Sleep Apnea Syndrome is due to episodes of partial or complete closure of the airways that can lead to the cessation of breathing [2]. Risk factors include obesity, enlarged tonsils or vegetations, allergic rhinitis, craniofacial abnormalities such as micrognathia, retrognathia, midfacial hypoplasia, or an Arnold-Chiari skull base malformation. Other causes that are part of a more general picture can be the cause, such as mucopolysaccharidosis, Infantile Cerebral Palsy, muscular dystrophies and genetic diseases such as Down syndrome.

But in the context of ODYSSEOS, the disorders explored are Neurodevelopmental disorders as defined in the DSM-V [3], and therefore the genetic, neurological or malformations of the cranio-occipital hinge are not evaluated, which are the subject of another treatment, involving geneticists, pediatric neurologists and pediatric neurosurgeons.

The identification of sleep disorders in Attention Deficit Disorder in children is part of the initial evaluation. They are sought out by the interview, and confirmed if necessary by a specific questionnaire filled in by the parents [4], allowing them to be classified as difficulty falling asleep, parasomnias and breathing difficulties. This classification helps guide the therapeutic approach. This scale also makes it possible to determine whether sleep is restorative and whether there is daytime sleepiness, knowing that in children this is less frequent than in adults. But it is not enough to determine signs of severity. Classically, these result in dark circles or morning headaches, and nocturnal urinary accidents.

In the event of a sleep abnormality, as part of the investigations in search of a Neurodevelopmental Disorder as defined by the DSM-5 [4], it is therefore necessary to look for a cause which may be an allergy, an enlargement of the tonsils [5], a martial deficiency [6], and a Sleep Apnea Syndrome [2].

If sleep apnea syndrome is suspected on clinical examination, it is important to perform a polysomnography. The pathological threshold of which is an apnea-hypopnea index greater than 2 per hour. This is why this assessment is carried out in a specialised unit.

Once the SAS has been diagnosed and its severity assessed, the therapeutic approach will be adapted. An ENT referral is often offered to treat an allergy or remove a nasal or oropharyngeal obstruction [5]. Indeed, it has been proven that adetonsillectomy is effective [7,8] in case of obstruction. Sometimes orthodontic care is necessary, in the case of micrognathia for example, in order to widen the jaw. If these measures are not effective enough or if there is no obstruction, Continuous Positive Airway Pressure (CPAP) can be used [9]. Correcting an iron deficiency can indeed lead to improvement [6], as can dietary advice aimed at limiting the excessive consumption of fast sugars [10], and reducing weight.

All of these actions can be performed separately or together, depending on the cause. They do not exempt them from specific ADD support, which is done in neuropsychology for cognitive remediation and work on learning strategies, in psychomotor skills for the management of impulsivity, and in occupational therapy to improve graphics and use digital tools to compensate for difficulties.

In view of the experience of the service and to improve the detection and correction of sleep disorders in children with ADD, we wanted to evaluate the state of play in the ODYSSEOS-Sleep Unit cooperation. The objective of this work was therefore to determine the frequency of SAS in a population of children with ADD detected at ODYSSEOS.

Materials and methods

The study is retrospective over two years and focuses on the records of all children diagnosed with ADD in the department over two years.

Families were informed at the entrance that their child's data could be used for research purposes, and would be anonymised. There was no breach of ethical rules.

156 files were analyzed. This review confirmed the records of ADD.

The average age is 10.7 years with a standard deviation of 2.45 years.

The gender distribution is 40 girls and 116 boys.

Results

They are summarized in the Table.

Of the 156 children in the study, a Sleep Disorder was detected in 38 cases (24.3%).

Of these 38 cases, the specialist doctor of the Sleep Unit indicated polysomnography for 31 patients with a suspicion of SAS.

This evaluation showed the existence of SAS in 27 cases (71%), i.e. 17.3% of children with ADD.

It seemed interesting to us to compare our study with those of Kapoor [11] and Miano [12]. All three relate to groups of children with ADD who are homogeneous in age (Table). The number of children differs, as do the protocols. Miano's study is prospective and comparative, whereas Kapoor's and ours are retrospective and observational.

In their study of 66 children, Kapoor et al [11] detected sleep difficulties due to a sleep disorder in 9.1% of cases when questioning parents. They were mostly due to SAS (71%) with a rate of 19.7% of restless legs syndrome. In our study, the questioning of the parents of children with ADD showed a sleep disorder in 24.3% of cases. Our two studies are therefore based on the questioning of parents, and show a similar rate of SAS (71%) among children with ADD with sleep disorder. However, the questioning in Kapoor's study seems to underestimate the number of sleep disorders, and therefore of SAS (8.36% vs 17.3%). This is in favor of a higher sensitivity of our scale for detection.

Table 1 - Comparative results between studies.

	Odysseos (2024)	**Kapoor (2021)**	**Miano (2019)**
Number of patientswith ADD	156	66	30
Average age	10.7+/-2.45	11.6 +/-3.6	10,1 +/-2.1
Frequency of sleep disturbances	24.3%	9%	100%
Frequency of SAS among sleep disorders	71%	71%	50%
Frequency of SAS among ADDs	17.3%	8.36%	50%

The study by Miano [12], which includes a systematic polysomnography, reveals that all patients with ADD have a sleep disorder, which is not found in patients without ADD, while only 24.3% of our patients have a sleep disorder (Table). Half of the children with a sleep disorder are carriers of SAS in Miano's study, i.e. half of the children with ADD since in his study all have a sleep disorder.

Discussion

It therefore seems that the interview in our study in turn underestimates the frequency of sleep disorders (24.3% vs 100%), and is therefore less sensitive than the interview performed by Miano's team in children with ADD. We also detect fewer SAS (17.3% vs. 50%). It therefore seems interesting to us to offer systematic polysomnography to children with ADD. It will also be necessary to improve the detection of other sleep disorders by improving the sensitivity of the questionnaires. An improvement in specificity would make it possible to better target children in need of polysomnography, but requires prospective and multicenter research.

Improving detection and performing systematic polysomnography would be all the more useful as there are therapeutic means [13] to treat a phase delay (melatonin), restless legs syndrome (compensation for iron deficiency) and sleep apnea syndrome (ventilation, lingual rehabilitation, removal of vegetations and/or tonsils). And moreover, in our study, night-time ventilation was implemented on 20 occasions among the 27 SAS situations (74%).

However, our study does not allow us to say whether sleep disorders are a cause or a consequence of ADD or a combination, in any case they must be corrected systematically because most of the time they can be.

Conclusion

This study shows an insufficient sensitivity of the interview for the detection of sleep disorders in children with ADD, as well as a defect in the detection of SAS. A systematic polysomnography of children with ADD would make it possible to detect Sleep Apnea Syndrome, accessible to an effective treatment. It would also be desirable to improve the sensitivity and specificity of questionnaires for detecting sleep disorders.

Our study does not allow us to say whether sleep disorders are a cause or a consequence of ADD or a combination, but they must be corrected systematically because they are often accessible to treatment.

Conflict of d'interest

No conflict of interest exists in this study.

Authors'contribution

Dr. Malliopoulos diagnosed ADD, provided rehabilitation with his team, referred to Dr. TACK, and wrote the article.

Dr. Tack Sabine carried out the Sleep consultations, the interpretation and analysis of the polysomnographies performed in his department, and set up the Sleep treatments.

Dr. Daribayev served as an external expert and consultant on the article design, reviewed and edited the article, translated the abstract into Russian and Kazakh languages.

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УДК 614.253.52:616.28-008.1-052

ЕСТУ ҚАБІЛЕТІ БҰЗЫЛҒАН НАУҚАСТАРҒА КҮТІМДЕГІ МЕДБИКЕЛІК ҮДЕРІС: ЖАҢА ТӘСІЛДЕР МЕН СЫН-ТЕГЕУРІНДЕР

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Түйіндеме

Мақалада есту қабілеті бұзылған науқастарға күтім көрсету барысындағы медбикелердің рөлі жан-жақты талданған. Күтімнің негізгі кезеңдеріне – диагностика, емдеу, оңалту және әлеуметтік бейімделу – ерекше назар аударылған. Авторлар қазіргі заманғы технологияларды, соның ішінде телемедициналық платформаларды, есту аппараттарын және кохлеарлы имплантарды есту қабілетін оңалту тиімділігін арттыру үшін қолдану қажеттігін атап өтеді. Медбикелердің кәсіби дағдыларын жетілдіруге бағытталған білім беру бағдарламалары клиникалық қауіптерді азайтуға және пациенттермен өзара әрекеттестікті жақсартуға ықпал етеді. Есту қабілетінің прогрессивті