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The Inattentiveness of Children with ADHD may Worsen During the COVID-19 Quarantine

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Research note

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Abstract

Objective: The coronavirus disease 2019 pandemic has caused school closures worldwide. Japan's Prime Minister declared a state of emergency based on the coronavirus pandemic for Tokyo, Chiba, and other prefectures on April 7, 2020. Children with ADHD are particularly vulnerable to the distress caused by the pandemic and physical distancing measures, and they might display increased behavioral problems. We surveyed 15 children with ADHD, aged 11.8 ± 2.8 years old; 13 were males and 2 were females (combined subtype, n=12; inattentive subtype, n=3). The children's ADHD-RS scores were assessed by their mother (n=12), father (n=1), or nursing home staff (n=2) from before the emergency declaration (in February or March 2020) to after the emergency declaration (April or May 2020). There were no changes of treating physician, drug type or quantity, or psychotherapy or assessment person from January 2020 to May 2020.

Results: A comparison of the baseline scores and secondary outcomes reveals that the ADHD-RS total score and inattentive subscore worsened significantly during this period, whereas the hyper/impulsive subscore did not. In conclusion, we suggest that policymakers, healthcare providers and families should be mindful of the potential development of inattentiveness among children with ADHD who are quarantined because of COVID-19.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has caused school closures worldwide.[1] Japan's Prime Minister Shinzo Abe declared a state of emergency based on the coronavirus pandemic for Tokyo, Chiba, and five other prefectures on April 7, 2020.[2] Schoolchildren are worried that the new school semester won't start. Children with Attention-Deficit Hyperactivity Disorder (ADHD) are particularly vulnerable to the distress caused by the pandemic and physical distancing measures, and they might display increased behavioral problems.[3] The European ADHD Guidelines Group suggests that for children with ADHD who are affected by the pandemic quarantine, clinicians should avoid increasing medication doses or adding medication to manage a crisis or stress related to the quarantine.[3] We have thus sought to determine whether the COVID-19 quarantine has affected the symptoms of children with ADHD.

Main Text

We surveyed 15 children with ADHD diagnosed according to the DSM-5 criteria[4], aged 11.8 ± 2.8 years old; 13 were males and 2 were females (combined subtype, n=12; inattentive subtype, n=3). The children's ADHD-RS[5] scores were assessed by their mother (n=12), father (n=1), or nursing home staff (n=2) from before the emergency declaration (in February or March 2020) to after the emergency declaration (April or May 2020). There were no changes of treating physician, drug type or quantity, or psychotherapy or assessment person from January 2020 to May 2020.

The children's medications were methylphenidate extended-release (18 mg/day, n=2; 27 mg/day, n=1; 36 mg/day, n=1; 54 mg/day, n=1), methylphenidate extended-release and guanfacine (36 mg/day and 1 mg/day, n=1; 27 mg/day and 5 mg/day, n=1; 27 mg/day and 3 mg/day, n=1), atomoxetine (50 mg/day, n=1), guanfacine (1 mg/day, n=1), methylphenidate extended-release and aripiprazole (36 mg/day and 9 mg/day, n=1), guanfacine and aripiprazole (3 mg/day and 3 mg/day, n=1), aripiprazole and risperidone (15 mg/day and 1.5 mg/day, n=1), or a combination of methylphenidate extended-release, atomoxetine, quetiapine and sodium valproate (36 mg/day, 70 mg/day, 750 mg/day and 700 mg/day, n=1) . One subject was drug naïve.

Table 1 summarizes the children's baseline scores and secondary outcomes (ADHD-RS total score, hyper/impulsive subscore and inattentive subscore) from before the emergency declaration (February or March 2020) to after the emergency declaration (April or May 2020). A comparison of the baseline scores and secondary outcomes reveals that the ADHD-RS total score and inattentive subscore worsened significantly during this period, whereas the hyper/impulsive subscore did not.

Table 1.
Baseline scores and secondary outcomes from before (February/March 2020) to after (April/May 2020) the April 7th emergency declaration in ADHD subjects

	Feb./March 2020	**April/May 2020**	**p-value (df, t scores)**
ADHD-RS Total Score	21.9 ± 10.8	26.9 ± 10.5	0.004* (14, −3.47)
ADHD-RS Hyper/Impulsive Subscore	8.5 ± 7.3	9.9 ± 6.9	0.052 (14, −2.13)
ADHD-RS Inattentive Subscore	13.4 ± 4.8	16.9 ± 4.8	0.002* (14, −3.73)
The data are mean ± SD. Paired Student's two-tailed t-test was used to compare changes from the baseline (before) to after the emergency declaration. *$p<0.05$.			

To our knowledge, this is the first report demonstrating that inattentive symptoms in children with ADHD worsened after the children were quarantined for COVID-19, even in the absence of treatment changes. It is plausible that the worsened inattentive symptoms in our patients were associated with psychological trauma due to being quarantined. A very recent study[6] showed that ADHD symptoms in children significantly worsened in comparison to the baseline state during the COVID-19 outbreak in China and that children's negative mood state was associated with ADHD symptoms. It was also reported[7,8] that children who were isolated or quarantined during pandemic diseases were more likely to develop acute stress disorder, adjustment disorder, and grief. Moreover, 30% of the children who were isolated or quarantined met the clinical criteria for post-traumatic stress disorder.[7,8] The prominent clinical responses to traumatic and stressful events include anhedonic and dysphoric symptoms, externalizing angry and aggressive symptoms, or dissociative symptoms,[4] including inattentiveness.

A very recent review[9] showed that policy-makers should be aware of the equivocal evidence when considering school closures for COVID-19, and that combinations of social distancing measures should be considered. Additionally, one of the main threat of during the COVID-19 quarantine is an increased risk for domestic violence and child maltreatment, especially for children with disabilities, trauma experiences.[10] In conclusion, we suggest that policymakers, healthcare providers and families should be mindful of the potential development of inattentiveness among children with ADHD who are quarantined because of COVID-19.

Limitations

The main limitation of this study is its small sample size. In addition, we did not assess ADHD subjects and their assessment person with mood and anxiety scales. It might be related with the changes in life style or natural course of ADHD. Therefore, further studies using larger sample sizes of ADHD subjects and their assessment person cohorts will be needed to confirm these results.

List Of Abbreviations

COVID-19: The coronavirus disease 2019, ADHD: Attention-Deficit Hyperactivity Disorder, ADHD-RS: Attention Deficits/Hyperactivity Disorder-Rating Scale IV Japanese version

Declarations

Ethics approval and consent to participate

The Ethics Committee of Chiba University Graduate School of Medicine approved this study (No. 3713) with the UMIN registration[11] and the use of an opt-out consent method. Opt-out consent was obtained from a parent or guardian on behalf of any participants under the age of 16. Anonymity of subjects was preserved.

Consent for publication

Not applicable.

Availability of data and materials

The datasets during the current study available from the corresponding author on reasonable request. The authors confirmed that these patients have not been reported in any other submission by us or anyone else.

Competing interests

TS, TN and MI report competing interests in the appendix. TM and TJ declare no competing interests.

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No funding was received.

Authors' contributions

All authors contributed to development of the study protocol. TS designed the study, and drafted the initial manuscript. TS and TN carried out the initial analyses. TS, TN, MT and JT designed the data collection instruments. MI coordinated and supervised, and critically reviewed the manuscript.

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Not applicable.

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