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An Evaluation on the Relation between Chronic Mouth Breathing and Children IQ

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Abstract:

At the beginning of the 3rd millennium, one of the most important wishes of the human being is to prevent the causes that disturb the intelligence, especially in the childhood. One of the most famous disorders that seems to have such an effect, is Obstructive Sleep Apnea Syndrome (OSAS), however, only a few studies have described the level of intelligence or cognition in the children with OSAS. Because of finding no preliminary study to search for any relation between the intelligence and chronic nasal or nasopharyngeal obstruction leading to chronic mouth breathing in the literature, the authors arranged a study to evaluate this relation.

In a nonrandomized cross- sectional study, 60 otherwise healthy children with 6-12 years of age whom had been referred to the clinic of otolaryngology of Al- Zahra hospital in Isfahan were selected as the case group with the chief complaint of mouth breathing for at least 2 months. Besides, we selected 60 healthy children from 2 schools in Isfahan as the control group that had no history of chronic mouth breathing during last 6 months. All cases were referred to the clinic of psychiatry to test their intelligence. The data gathered and analyzed using T-Test. The study resulted that mean IQ of 60 subjects in the case group, with a range of 89-114, was measured about 100.07± 6.15. Mean IQ of the subjects in the control group was measured about 102.73± 6.14 (range 94-124). There was a statistically significant difference between the mean IQ of the case and control groups; so, there was found a relation between IQ and chronic mouth breathing (P=0.02). It is concluded that the chronic mouth breathing would lead to a lowered IQ comparing with the control group. Some of the most common causes of mouth breathing due to nasal or nasopharyngeal obstruction are adenoid hypertrophy and allergic rhinitis. The treatments of both of etiologies are easily accessible. This means that the lowered IQ of children with chronic nasal or nasopharyngeal obstruction seems to be, at least in some degree, preventable. These initial findings about the relation of IQ and chronic mouth breathing suggest that these are identifiable and preventable sequelae of childhood and that it is very important to evaluate the etiology of this problem and improve the patients' IQ with the appropriate intervention.

Key Words: IQ, mouth breathing, nasopharyngeal obstruction, allergic rhinitis, adenoid hypertrophy, intelligence, and obstructive sleep apnea syndrome.

Introduction:

At the beginning of the 3rd millennium, one of the most important wishes of the human being is to improve his/her intelligence or at least, prevent the causes that might disturb it, especially in the childhood. One of the most famous disorders which seem to have such an effect is Obstructive Sleep Apnea Syndrome (OSAS) [(1)]. There are many studies that have revealed the neurophysiologic deficit in adults with OSAS, however, only a few studies have described these problems in the children with OSAS [(1)]. According to a fact that the most common cause of OSAS in children is adenoid hypertrophy [(2)], and because of finding few preliminary studies to search for any relation between the intelligence and chronic nasal or nasopharyngeal obstruction leading to chronic mouth breathing in the literature, the authors arranged a study to evaluate any relation between IQ and chronic mouth breathing in the children with 6-12 years old.

Materials and Methods:

In a nonrandomized cross- sectional study, 60 otherwise healthy children with 6-12 years of age whose parents had referred them to the clinic of otolaryngology of Al- Zahra hospital in Isfahan were selected; the chief complaint of all selected cases was the mouth breathing for at least 2 last months. After corporation of their parents to enter the study, all cases were referred to the clinic of psychiatry to test their intelligence. After complete data collection from the case group, we selected 60 healthy children for the control group that had no history of chronic mouth breathing during last6 months. The approach of selection of the subjects for the 2nd group was age matching. All of the subjects of the 2nd group were selected from 2 schools in Isfahan. Again, after their parents' permission for testing their intelligence, all cases were referred to the same clinic of psychiatry. The data gathered and analyzed using T-Test.

Results:

After analyzation of the data, mean IQ of 60 subjects in the case group, with a range of 89-114, was measured about 100.07± 6.15. The range of measured IQ in the control group was 94-124. Mean IQ of the subjects in the control group was measured about 102.73± 6.14 (table 1). Mean IQ of all subjects in the 2 groups was measured bout 101.4± 6.26.T-test revealed that there was a statistically significant difference between the mean IQ of the case and control groups; so, there seemed to be a relation between IQ and chronic mouth breathing (P=0.02).

Table 1, Mean IQ of the main and control groups.

Control	Case	IQ
1	-	86-90
18	2	91-95
18	21	96-100
13	19	101-105
7	10	106-110
3	5	111-115
-	2	116-120
-	1	121-125

Discussion:

Mouth breathing due to nasal or nasopharyngeal obstruction has been a reason of getting attention of otolaryngologists since last 115 years [3]. The bony structure and soft tissue of the upper air way may have an important role in the nasal breathing [3]. A lowered muscle tone when the case with nasal obstruction is asleep, leads to a more probable danger of nasal obstruction and mouth breathing during the sleep [3]. Nixon and Brouillette reported a series of behavioral disorders in children with upper air way obstruction leading to sleep disorders [2]. Rhodes etal in another study revealed a relation between the morbid obesity with OSAS and some deficits in memory, learning and vocabulary [4]. Lewin etal showed that children with OSAS had significantly more behavior problems than the healthy comparison group based on parents' reports [1]. They found that the more OSAS was severe, the more verbal ability had decreased [1].In a study by Goottlieb etal reported that according to their study, the existence of the symptoms of sleep breathing disorders, even in the absence of OSAS, would lead to a lowered intelligence and memory function [5]. Freidman etal showed that neurocognitive function in the presence of OSAS is lower than the control group [6]. In our study, we found that chronic nasal or nasopharyngeal obstruction leading to chronic mouth breathing would lead to a lowered IQ comparing with the control group. Some of the most common causes of nasal or nasopharyngeal obstruction are adenoid hypertrophy and allergic rhinitis [3, 7]. The former is the most common cause of OSAS in the children [3]. The latter occurs in more than 30% of children [7]. The treatments of both of etiologies seem to be easily accessible. This means that the lowered IQ of children with chronic nasal or nasopharyngeal obstruction seems to be preventable.

Conclusion:

In our study, we found that chronic nasal or nasopharyngeal obstruction leading to chronic mouth breathing would lead to a lowered IQ comparing with the control group. Some of the most common causes of nasal or nasopharyngeal obstruction are adenoid hypertrophy and allergic rhinitis. The former is the most common cause of OSAS. The latter occurs in more than 30% of children. The treatments of both of etiologies seem to be easily accessible. This means that the lowered IQ of children with chronic nasal or nasopharyngeal obstruction seems to be preventable. These initial findings about the relation of IQ and chronic mouth breathing suggest that there are identifiable and preventable sequelae of childhood and that it is very important to evaluate the etiology of this problem and improve the patients' IQ with the appropriate intervention.

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