EARLY ONSET ANOREXIA NERVOSA IN CHILDREN AGED 8 TO 12 YEARS: A RETROSPECTIVE STUDY

Elisa Gonzalez Gonzalez[1,2], Guillaume Le Loc'h[3],
Mouna Al Husni Al Keilani[3] & Véronique Delvenne[1,3]

[1]Faculty of Medicine, Université Libre de Bruxelles, Brussels, Belgium
[2]Child and Adolescent Psychiatry Department, Erasme Hospital, Brussels University Hospital (HUB),
Brussels, Belgium
[3]Child and Adolescent Psychiatry Department, Queen Fabiola Children's University Hospital,
Brussels University Hospital (HUB), Brussels, Belgium

SUMMARY

Introduction: Early onset anorexia nervosa accounts for 8% of anorexia cases worldwide. Very few studies on this subject exist, given the difficulty of obtaining a sufficiently significant sample. The aim of this study was to supplement the literature and investigate the clinical characteristics of early onset anorexia nervosa.

Subjects and methods: This is a monocentric retrospective study carried out on the records of patients aged 8 to 12 years with early onset anorexia nervosa, hospitalized in the child psychiatry unit at the Queen Fabiola University Children's Hospital, in Brussels, from 01/01/2000 to 01/07/2023. Descriptive statistics were then performed on the sample and compared with the data found in the literature.

Results: This study included 48 children aged 8 to 12 with early onset anorexia nervosa. In the sample, three children were diagnosed with autism spectrum disorder during hospitalization. The sample included 36 girls and 12 boys, with an average age of 11 years and 7 months. The patients had an average body mass index of 13.6 kg/m^2 on admission. A total of 87% of the parents had a history of psychiatric illness. A large majority of the children had underlying depressive and anxiety disorders. The duration of anorexia nervosa in these children was 13.5 months from diagnosis, with an average hospital stay of 5.4 months.

Conclusions: This study seems to show the difficulty for parents and caregivers in diagnosing this illness and the probable impact of genetics and maternal depression on the development of early onset anorexia nervosa.

Key words: eating disorders - anorexia nervosa - early onset anorexia nervosa - children

Abbreviations: AN - anorexia nervosa; HUDERF - Queen Fabiola University Children's Hospital; ASD - autism spectrum disorder; BMI - body mass index

* * * * *

INTRODUCTION

Anorexia nervosa (AN) is a severe psychiatric disorder that mainly affects adolescents (Godart et al. 2010). It is defined, according to the DSM-V, by a restriction of energy intake, an intense fear of gaining weight, or becoming fat, and an alteration in the perception of weight or body shape (Mustelin et al. 2016). In severe cases, weight loss can reach 85% of body mass and is associated with high mortality rates (Chabrol 2013).

AN seems to be affecting more and more young adolescents, and even children, with serious consequences on their growth and development. AN in children during prepuberty, before menarche or the appearance of secondary sexual characteristics, is rare but has been increasing significantly in recent years. Its incidence is estimated at 0.2-0.6%, according to studies, and represents 5-10% of all AN cases. Studies demonstrate that early onset AN presents similar symptoms to AN that begins in adolescence (Thibault et al. 2017, Herpertz-Dahlmann et al. 2018). More specifically, the symptomatic starting point is a desire to adopt a healthy diet rather than a desire to lose weight in children with perfectionist personality traits (Meilleur et al. 2014). In recent years, numerous studies have investigated the biological and genetic influence found in this pathology, arriving at no clear conclusions. Many questions remain about its etiopathogenic mechanism (Herpertz-Dehlmann & Dahmen 2019). There are few data in the literature regarding prepubertal AN due to the difficulty in gathering a sufficiently large sample of patients, given the rarity of the condition (Meilleur et al. 2014).

To better define the clinical characteristics of children with early onset AN, we carried out a retrospective study in the child psychiatry unit of the Queen Fabiola University Children's Hospital (HUDERF), recognized as a reference center for these young patients. We will compare these data with those found in the literature, and to classic AN in adolescents. A better understanding of this disorder should allow early detection and improved treatment.

SUBJECTS AND METHODS

Data were retrospectively collected from the files of children aged 8 to 12 years, who were admitted to hospitalization for weight loss in the HUDERF child psychiatric unit, between January 2000 and July 2023.

The selected children had to present weight loss without an underlying somatic cause, meet the DSM-V diagnostic criteria for AN at their admission, and be hospitalized for the first time for this reason. The age of onset of first symptoms had to be strictly below 12 years, with the aim of targeting children suffering from early onset AN of pre or peripubertal form.

For each patient, several data previously selected based on literature were sought: personal, family, eating behavior, stress factors, psychopathological data and hospitalization characteristics. These data were then compared to those found in the literature concerning AN, to establish the most characteristic profile possible of children affected by the early form of this pathology.

RESULTS

Personal data

The sample consists of 48 children aged between 8 and 12 years old, hospitalized in child psychiatry for AN. In this sample, 3 children also received a diagnosis of autism spectrum disorder (ASD) during their stay.

Among the group of children with early onset AN, there are 36 girls and 12 boys, mostly of Belgian origin. The mean age of onset of weight loss is 10 years and 8 months, with an average body mass index (BMI) of 13.6 kg/m^2 at diagnosis and a percentile below percentile 3 in 52% of them.

Family data

At the family level, we notice that, in half the situations, the parents are separated. Relationships are described as conflictual within the family home in 48% of children. Most of them come from families with medium socio-economic status.

Psychiatric history in at least one parent is found in 87% of patients, including 17% with a history of AN in the mother, and 71% have parents with various psychopathological histories, including 71% with a depressive profile, mostly mothers. Parents describe in 38%, giving importance to their appearance.

In terms of siblings, we note that half the children have only one brother or sister, and 13% are only children. In half the cases, the patients are the second siblings. Furthermore, 48% of children report having a rivalry relationship with their brother or sister. We note in 13% of cases, a pathology within the siblings.

Eating behavior

In terms of food intake, all the children showed complete restriction, with 38% of them also showing water restriction. Only one child in the cohort presents potomania. Less than 10% of children show purgative behaviors such as vomiting. Physical hyperactivity is described in 38% of them.

Psychopathological data

In terms of psychopathological presentation, 73% of children present depressive affect and 69% separation anxiety. Cognitive rigidity is found in 65% of patients, with obsessive-compulsive disorder present in 8% of them. The approach of puberty is a source of anxiety for 31% of children.

Recent stress factors

About the stress factors identified as possible triggers of the disease by parents, we find mainly teasing about appearance in 58% of cases, a recent death in the immediate environment in 10% of cases and a domestic accident in 4% of cases.

Data verbalized by the child

According to the children, food restriction and weight loss are associated with a desire to eat healthily in 50% of them, and a fear of gaining weight in 79% of them. Dysmorphophobia is present in 48% of them, and 27% of the children in this cohort seem to be aware of being affected by a pathology with serious somatic consequences. Fear of vomiting is only present in 6%, and fear of stomach aches expressed in 10% of them.

Hospitalization characteristics

Regarding hospitalization characteristics, the average age at admission is 11 years and 7 months, with a duration of disease progression of 8.3 months before admission. Children were mainly referred via pediatric emergencies in 52% of cases, by a child psychiatrist in 35% of cases, and by a family doctor in 8% of cases. The average hospital stay is 5.4 months, with a discharge BMI of 16 kg/m^2. The total duration of the disease until hospital discharge is 13.7 months. A second hospitalization was necessary for 31% of children.

DISCUSSION

Early onset AN seems to affect boys more frequently than adolescent onset AN. We found a ratio of 1 boy for 3 girls, whereas classically, a ratio of 1 boy for 10 girls is observed in adolescent AN. Delay in treatment in child psychiatric hospitalization, about a year after the appearance of the first symptoms, is usually described. Our data align with this, with parents noticing the first signs of AN at around 10 years 8 months, and hospitalization occurring at an average age of 11 years and 7 months (Meilleur et al. 2014).

However, the symptoms of early onset AN seem to develop more rapidly and severely than during adolescence. Indeed, the weight at admission in our sample is, in 52% of cases, below the third percentile with an average BMI of 13.6 kg/m^2. Half of the children also arrive via pediatric emergencies in a state of severe

malnutrition. Among young people going through puberty, awareness of eating problems among parents and caregivers seems delayed. Parents report not noticing their child's rapid and significant weight loss, despite a gradual change in their child's eating habits. It should be noted that 35% of the children had already been treated by a child psychiatrist on an outpatient basis. Only 8% of children were referred for hospitalization by the family doctor. These findings may reflect a lack of understanding of the disorder in the prepubertal period and its indications for treatment.

Weight loss, in proportion to height, appears to be more pronounced in early onset AN than in late onset AN, leading to a major impact on the child's growth and pubertal development (Thibault et al. 2017, Van Noort et al. 2018). It's important to note that there is a direct correlation between the duration of disease progression and the duration of care required for recovery; the longer the duration of disease progression, the longer the duration of care (Godart et al. 2010). In our population, the duration of hospitalization is on average 5.4 months, for discharge with a BMI of 16 kg/m^2 and a weight reaching the 50th percentile in most cases. This demonstrates the effectiveness of intensive multidisciplinary care around children with AN. A second hospitalization was required in 31% of children within 6 months following discharge corresponding to the recurrence rate of the pathology classically found in the literature (Pruccoli et al. 2023).

Regarding their eating habits, half of the children verbalized a desire to change their diet for a healthier one, unlike adolescent AN (Meilleur et al. 2014). Similarly, 48% of children present dysmorphophobia, and a large majority express fear of gaining weight. We can see that only a small minority are aware of their thinness and the physical consequences it may entail. This lack of awareness can be explained by the cerebral immaturity of young people, who are unable to appreciate the impacts of the disease on their health and development (Bargiacchi 2014).

We note in this study that early AN is characterized by exclusive food restriction in all patients. Only 8% of children used purgative methods, as described in the literature (Pinhas et al. 2011). We also note that 38% of children have fluid restriction, due to their greater sensitivity to the sensation of gastric heaviness compared to adolescents, leading them to even avoid drinking (Ayrolles & Stordeur 2021).

Concerning family dynamics, 54% of the parents in our sample are separated, with persistent parental conflicts in half of them. However, parental separation does not appear to be a precipitating factor. Conversely, the prevalence of family psychiatric history found in the sample in 87% of situations, raises questions. AN was found in 17% of parents, and 71% of children had a parent, mainly the mother, who experienced a depressive episode. This observation has already been highlighted in the literature for children, but less significantly (Thibault

et al. 2017, Meilleur et al. 2014). This could refer to the feeling of lack and emotional emptiness present in anorexic children whose parents is psychologically absent (Corcos & Jeammet 2001). It is likely that genetic and environmental factors influence the onset of early AN. Sibling rivalry is present in 48% of our sample, and early onset AN seems to affect the second sibling more frequently, the eldest being less often affected. This sibling rivalry could be due to the psychic unavailability of the parent, leading for a sibling battle for parental affection.

Finally, it seems that prepubertal AN, compared to adolescent AN, is more frequently associated with a trigger (Van Noort et al. 2018). In 58% of the children, a history of being teased by peers about their physical appearance is present. This data is found less significantly in the literature, with an average of 20% of children having experienced teasing (Meilleur et al. 2014). Some children also mention having lost a loved one in the months preceding the AN, referring to the notion of loss and mourning.

In our population, psychiatric comorbidities are very common, as described in the literature. In our sample, 73% of children are depressed, and 69% has separation anxiety. A third of the children are anxious about the imminent onset of puberty and the body changes it entails. However, it's sometimes difficult to know whether it's a disturbed psychological state that triggers anorexia, or whether it's anorexia that leads to a more depressive and controlling functioning. We can note that there is no difference at the psychopathological level with later onset AN (Meilleur et al. 2014).

In our sample, 3 patients were diagnosed with an autism spectrum disorder (ASD) during their stay. This diagnosis was considered after a period of observation, and was clinically objectified, due to social and communication difficulties, as well as a lack of cognitive flexibility more pronounced and extended to other spheres than eating. Indeed, in AN, mental flexibility difficulties mainly affect the eating sphere, which was not the case in these 3 young girls (Dovey et al. 2019). This delay in making the diagnosis can be explained by the difficulty of distinguishing between what belongs to the field of AN and what corresponds to ASD, especially in young girls. If they may only present autistic traits in the context of their anorexia, the diagnostic evaluation may be biased by the camouflage of their social difficulties and by their stereotypical and restricted behaviors, less pronounced than in boys (Strand et al. 2018). Regardless, to establish a diagnosis of ASD, it is essential to retrace the child's developmental history to observe the clinical signs of autism present before the onset of AN. Future studies on this subject could be relevant to further explore the link between AN and ASD, and allow the development of precise diagnostic tools (Tufo and al. 2019).

This study includes one of the largest samples of children hospitalized for early onset AN found in the literature. However, as a retrospective study, it has certain limitations. This is a retrospective monocentric

study, and variables could not be found in each patient's files. For example, the age of appearance of secondary sexual characteristics was found in only 28 patients, forcing us to define prepuberty as the age between 8 and 12 years, and not as the period preceding menarche and the arrival of secondary sexual characteristics. A Tanner stage should be performed upon admission to optimize the child's pediatric and endocrinological follow-up.

CONCLUSIONS

We know that the appearance of AN is multifactorial, combining predisposing, triggering, and perpetuating factors that maintain the disorder. Individual and family factors act in a developmental, environmental, and epigenetic perspective, predisposing the individual to develop AN. Some factors then trigger the pathology, such as puberty, life events involving separation, and the introduction of a diet (Godart et al. 2007).

Early onset AN presents specific clinical characteristic in children aged 8 to 12 years old. The rapid evolution of the symptomatology, the presence of depressive affect and separation anxiety, the family history of depression, and the existence of rivalry within the family seem to distinguish this entity from AN in adolescents. Moreover, an association with ASD does not seem uncommon.

Early detection of this disorder, through awareness-raising among general practitioners and school staff, appears essential to initiate rapid and adequate management.

References

1. Ayrolles A & Stordeur C: *Restrictive eating disorders in children: anorexia nervosa, "picky eaters", phobias and other ARFIDs. Cah Nutr Diet 2021; 56:272-279*

2. Bargiacchi A: *Brain imaging in early onset anorexia. Arch Pediatr 2014; 21:548-51*

3. Chabrol H: *L'anorexie mentale de l'adolescence. Développements 2013; 14:29-38*

4. Corcos M & Jeammet P: *Eating disorders: psychodynamic approach and practice. Biomed Pharamcother 2001; 55:479-88*

5. Dovey TM, Kumari V & Blissett J: *Eating behaviour, behavioural problems and sensory profiles of children with avoidant/restrictive food intake disorder (ARFID), autistic spectrum disorders or picky eating: same or different? Eur Psychiatry 2019; 61:56-62*

6. Godart N, Perdereau F & Wallier J: *Anorexia nervosa: rational for hospitalization in a psychiatry ward. Nutr Clin Metab 2007; 21:179-184*

7. Godart N, Lamas C, Nicolas I & Corcos M: *Anorexie mentale à l'adolescence. J Pediatr Pueric 2010; 23:30-50*

8. Herpertz-Dahlmann B, Dempfle A, Egberts KM, Kappel V, Konrad K, Vloet JA, et al.: *Outcome of childhood anorexia nervosa – the results of a five-to ten-year follow-up study. Int J Eat Disord 2018; 51:295-304*

9. Herpertz-Dehlmann B & Dahmen B: *Children in Need – Diagnostics, Epidemiology, Treatment and Outcome of Early Onset Anorexia Nervosa. Nutrients 2019; 11:1932*

10. Meilleur D, Jamoulle O, Taddeo D & Frappier J-Y: *Behavioral and personal characteristics in children aged 8 to 12 years (n=215) with an eating problem: a retrospective study. Neuropsychiatr Enfance Adolesc 2014; 62:27886*

11. Mustelin L, Silén Y, Raevuori A, Hoek HW, Kaprio J, Keski-Rahkonen A: *The DSM-5 diagnostic criteria for anorexia nervosa may change its population prevalence and prognostic value. J Psychiatr Res 2016; 77:85-91*

12. Pinhas L, Morris A, Crosby RD & Katzman DK: *Incidence and Age-Specific Presentation of restrictive Eating Disorders in Children A canadian Paediatric Surveillance Program Study. Arch Pediatr Adolesc Med 2011; 165:895-899*

13. Pruccoli J, Pugliano R, Pranzetti B & Parmeggiani A: *Premenarchal anorexia nervosa: clinical features, psychopharmacological interventions and rehospitalization analysis in a 1-year follow-up, controlled study. Eur J Pediatr 2023; 182:2855-2864*

14. Strand M, Von Hausswolff-Juhlin Y & Welch E: *A systematic scoping review of diagnostic validity in avoidant/ restrictive food intake disorder. Int J Eat Disord 2018; 52:332-360*

15. Thibault I, Pauzé R, Bravo G, Lavoie E, Pesant C, Di Meglio G, et al.: *What are the individual, family and social characteristics differentiating prepubertal from pubertal anorexia nervosa. Can J Psychiatry 2017; 62:837-844*

16. Tufo I, Nicole S & Picard V: *Traits autistiques chez des patients traités pour troubles du comportement alimentaire. Fr J Psychiatry 2019; 1:140*

17. Van Noort BM, Lohmar SK, Pfeiffer E, Lehmekuhl U, Winter SM & Kappel V: *Clinical characteristics of early onset anorexia nervosa. Eur eat Disord Rev 2018; 26:519-525*

Correspondence:
Elisa Gonzalez Gonzalez, MD
Child and Adolescent Psychiatry Department, Erasme Hospital,
Brussels University Hospital (HUB)
route de Lennik 808, 1070, Brussels, Belgium
E-mail: elisagonzalezgonzalez5@gmail.com