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MANAGEMENT OF ARFID (AVOIDANT RESTRICTIVE FOOD INTAKE DISORDER) IN A 12-YEAR-OLD ON A PAEDIATRIC WARD IN A GENERAL HOSPITAL: USE OF MIRTAZAPINE, PARTIAL HOSPITALISATION MODEL AND FAMILY BASED THERAPY

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SUMMARY

Background: *Avoidant Restrictive Food Intake Disorder (ARFID), at the cross roads of eating and feeding disorders, is sometimes called an "umbrella diagnosis" as it covers a certainly large and rather heterogeneous list of eating symptoms. It came with the DSM5 (2013) but still, there are no clear guidelines re diagnosis and treatment.*

Purpose: *Through this case, we aim to report not only a presentation of ARFID, but also how this relatively new and emerging diagnostic category has been identified and managed on a Pediatric Ward, in a General Hospital.*

Subject and methods: *This study reports the case of a 12y old girl Irish girl with ARFID treated by a multi-disciplinary team on a Pediatric Ward in a general hospital. A literature review regarding ARFID was concomitantly carried on, in order to consider the current therapeutic options recommended.*

Results: *3 admissions on a pediatric Ward were necessary for this patient with ARFID, who was successfully managed with a partial hospitalization model, Family Based Treatment (FBT) and Mirtazapine.*

Conclusions: *The dynamic around the management of this condition is the occasion to discuss the other therapeutic options suggested these days, and more specifically the different pharmacological molecules that have also been used in young patients with ARFID and the importance of involving a multi-disciplinary team.*

Key words: *Avoidant Restrictive Food Intake Disorder (ARFID) - child psychiatry - Mirtazapine - partial hospitalization model - Family Based Treatment*

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INTRODUCTION

The notion of ARFID was brought in the DSM 5 (2013); at the cross roads of eating and feeding disorders, it is characterized by inadequate nutritional or caloric intake leading to unintentional weight loss, nutritional deficiency, supplement (including enteral feeding) dependence, and/or significant psychosocial impairment. 3 subgroups were identified depending on the eating pattern that leads to ARFID symptoms and therefore motivates the food avoidance, each with distinct associated features:

- those with limited variety associated with the sensory features of eating (e.g. finicky or picky eating);
- those with limited intake that were associated with poor appetite or limited interest in eating;
- those whose avoidance of eating had occurred in response to a specific event and is associated fear of negative consequences from eating (e.g. gagging, choking or vomiting).

DSM 5 made clear that individuals with ARFID can only be diagnosed in the absence of weight or shape concerns. That being said, patients with ARFID may experience poor body image related to being visibly smaller in height and/or weight, by their same-age peers (Vargas 2018).

Furthermore, the feeding or eating disturbance cannot be explained by lack of available food or by an associated culturally sanctioned practice. The eating disturbance cannot occur exclusively during the course of anorexia nervosa (AN) or bulimia nervosa (BN), nor can it be attributable to a concurrent medical condition or be better explained by another mental disorder.

Though specific numbers are hard to track, Katzman et al. recently (2019) identified that the prevalence of ARFID among children and adolescents ranges from 1.5% to 23% among eating disorder day treatment and inpatient treatment settings. They also established that children and adolescents with ARFID are younger, include a greater proportion of boys (although still predominantly girls) and have a longer duration of illness compared with patients with AN. Their studies also showed that patients with ARFID compared to those with AN, appeared to have a greater likelihood of comorbid and /or psychiatric illness (obsessional compulsive disorder, generalized anxiety, autistic spectrum disorder, learning disorder and cognitive impairment).

In order to make a diagnosis of ARFID, it is highly recommended to get a thorough developmental, feeding, nutritional and psycho-social history to fully understand how a patient's presentation impacts their current physical and psychological well-being, though currently, there is no empirically validated treatment for ARFID.

SUBJECTS AND METHODS

This study reports the case of a 12y old Irish female patient with ARFID admitted on 3 occasions on a Pediatric Ward in a General Hospital and treated by a multi-disciplinary team. Concomitantly, between March 2018 and May 2019, a literature search based on electronic bibliographic databases as well as other sources of information (grey literature) was conducted in order to investigate the current ARFID treatment modalities and to guide our therapeutic path especially around psychopharmacology.

RESULTS

First Presentation and Admission to the Pediatric Ward

Alayah is a 12-year-old Irish girl who lives with both her parents and who is a high achiever pupil, currently in 5th class in National School. She is a popular girl with a lot of friends. She has a lot of hobbies and is a fantastic athlete. She though admits that she always wants to be "the best" and explains that sometimes she "puts herself under pressure". Alayah has no psychiatric nor medical personal history. There are medical or psychiatric family antecedents. Her Mum has had 2 children from a previous marriage (1 boy who is 26y old and 1 girl who is 22y old) who now live independently. Both Alayah's parents are working and Alayah is very close to them and to her siblings who are worried about the fact she is not eating and losing weight.

2 weeks prior to her first hospital admission, she was referred to the Emergency Department (ED) in Wexford General Hospital (WGH) Ireland, by her GP for severe constipation and Movicol (manufactured by Norgine Limited, New Road, Hengoed, Mid Glamorgan, CF82 8SJ, U.K.) was prescribed. But after 2 weeks, the GP re-refers Alayah to the ED as she has lost 2kg (weight: 41.2kg, height: 161.7 cm, BMI 15.8 which is at the 15th percentile) and is deteriorating as she cannot eat solids, vomits after solids and has no appetite. She is reported to drink water but to complain of nausea and cramps in the abdomen while having no energy. She also reports severe constipation, dizziness, crushing fatigue and body aches. At that stage, the Pediatric team decides to hospitalize Alayah in order to run different tests. No organic cause to Alayah's symptomatology is identified (her medical examination and tests results are normal and only the reduced food intake appears problematic. Testing for celiac disease is negative); a referral to Liaison Psychiatry is made.

During the first psychiatric evaluation of the patient, parents report that Alayah has always been a very fussy eater, that she had suffered from constipation since infancy. Her BMI has always been below the 20th Percentile. Mum reported how Alayah "tends to eat one food for a period of time and then moves onto another food". Alayah explains how she dislikes the smell of foods and being surrounded by other people eating while eating at school. Parents and Alayah report constipation has a significant impact on Alayah's intake as it greatly reduces her appetite. This leads to an irregular eating pattern with further exacerbates the constipation.

The parents say that Alayah's reaction towards constipation is initially to stop eating her meals for a day or two, before restarting eating small portions of food. Alayah explains that she has been 'badly constipated' for the past month and that she feels constantly nauseous. She reports that she is afraid to eat because she thinks she would get sick. She explains that last Saturday, she ate some pizza at a birthday party but felt sick and vomited it afterwards. While on Movicol, she experienced some liquid stools/fecal incontinence which were very embarrassing, especially as she was doing gymnastics.

She denies any history of binge eating, self-induced vomiting or use of laxatives (apart from Movicol), diuretics or diet pills. She also expresses the fact that she has no issue re body image and that "if anything, I am too thin as you can see my bones and I would like to put on some weight". She presents euthymic, not psychotic and not suicidal and apart from the fear of "being sick" if she eats, she has no psychiatric symptom. This presentation is consistent with a diagnosis of a restrictive/avoidant food intake disorder; this is discussed and explained to the patient and her family (Table 1).

Table 1. Growth History (12.03.18 - 17.07.2018)

Location	1st Hospital Admission	2nd Hospital Admission	Hospital Discharge	1st Child Psychiatry Review	Final Child Psychiatry Review
Date	12.03.18	27.03.18	01.06.18	12.06.2018	17.07.2018
Age (years and months)	12 years 1 month	12 years 1 month	12 years 4 months	12 years 4months	12 years 5 months
Weight (kg)	41.2 (46.81st centile)	39.4 (38.21st centile)	45.0 (59.10th centile)	43.8 (53.98 th centile)	42.4 (46.02nd centile)
Height (m)	1.618 (92.2nd centile)	1.618 (92.2nd centile)	1.618 (88.5th centile)	1.618 (88.5th centile)	1.618 (87.1st centile)
BMI (kg/m^2)	15.7 (13th centile)	15.1 (6th centile)	17.2 (33rd centile)	16.7 (<25th centile)	16.2 (17th centile)

Subsequently, Alayah is discharged from the Ward (after 3 days in WGH) and referred for outpatient department (OPD) follow-up both in Pediatry and in Child and Adolescent Mental Health Services (CAMHS) with a view of starting Family Based Treatment (FBT) also sometimes referred to as the Maudsley method.

Second Admission on the Pediatric Ward

2 weeks later, following an OPD pediatric review, Alayah is re-admitted on the Ward. Her weight has dropped to 39.4 kg and her BMI is now 15 which is on the 6th percentile. On medical examination, the temperature was 37.2°C, the respiratory rate 16 breaths per minute and the oxygen saturation 98% while the patient was breathing ambient air; the blood pressure and pulse were 111/71 and 64 beats per minute during the day but her heart rate dropped to 50 beats per minute during the night. Her abdomen is soft and a bit tender. Sexual development was classified as Tanner stage 2; the remainder of the examination and the para-clinical (blood, urine, ECG) investigations were normal. The hemoglobin level, hematocrit, platelet count, red-cell indexes and results of liver and renal-function tests were normal as were blood levels of glucose, calcium, magnesium, total protein, globulin, and thyrotropin (Thomas et al. 2017). As Alayah has not yet been seen in CAMHS, a re-referral to Liaison Psychiatry is made.

Alayah's sleep has deteriorated and she feels exhausted all day long. She has been eating very little at home and is gagging (but not vomiting) each time she puts food in her mouth. She says her constipation has not improved despite the use of Movicol directed by the Consultant Pediatrician.

A multi-disciplinary approach is then decided with the Pediatric team, the Liaison Psychiatry Consultant and the Dietician, though a prudent referral to an inpatient CAMHS (specialized in Feeding/Eating disorders) is also made (unfortunately no bed would become available so no transfer was organized).

Whilst Alayah is on the Pediatric Ward, we intent to help her make meaningful gains in her weight, stabilize physically so that she could possibly be taken off the waiting list of the inpatient CAMHS and be managed in the community.

The strategy focused on increasing appropriate feeding behavior and decreasing maladaptive patterns. In that regard, it is crucial that everyone in the multidisciplinary team is "on the same page". It is also essential to involve the parents in the care plan for consistency and sustainability of the results (FBT).

Meal plans are established and reviewed weekly with the dietician; they are calculated to cover Alayah's nutritional needs and help her restore a healthy weight. Besides increasing the food intake, the meal plans also progressively include various "new foods" for Alayah. This is first difficult for the patient who was very anxious about "having to eat more" and trying "new foods", but progressively her level of stress decreases and she engages very well in this program. She even makes suggestions in order to make the meal more comfortable for herself.

A 1:1 special nurse remains with the patient when her parents are not available. Indeed, it is essential that Alayah is accompanied and supported, especially around meal times.

Several psychiatric appointments (including family sessions) are scheduled weekly, always associating a member of the Pediatric team, and aim to minimize the stress (psycho-education of parents and staff) and reduce medicalization (validate the psychological component of the patient's condition) to provide a neutral environment for Alayah (Albahari & Rabie 2018).

Also in order to keep the stress as low as possible, we tried to provide Alayah with a familiar environment. So, planned and gradual breaks from the hospital are organized so that she spends time at home, with her family, her friends and her pets. With the psychoeducation provided, parents become more confident and they feel quite empowered and comfortable managing Alayah out of hospital. Her breaks out of hospital start to be regular and longer (a few hours in the beginning that are progressively extended to a full day and subsequently several nights and days out of the Ward), and help her to remain connected with her usual activities and friends. For example, she went on a school trip with the other pupils, but had to eat her full lunch, closely monitored by her teacher. This type of outing certainly stimulates her appetite and helps her to remain socially included. This can be considered as a partial hospitalization model as it falls on the continuum of mental healthcare between residential treatment and outpatient treatment. It includes individual and family intervention (FBT model), medication management, nutritional counselling and meal supervision. In the future group counselling should be a great and beneficial addition.

At this stage, the parents are not keen on a pharmacological option.

Alayah gradually improved (weight =45kg, BMI=17.2: 33th centile) and was discharged from hospital after 2 months of treatment. The relay is taken by her local CAMHS, from which she requests to be discharged after 3 reviews. CAMHS advised a follow up with the GP (weight monitoring) and Primary Care Psychology (ongoing support).

Third Admission on the Pediatric Ward

5 months later, Alayah attends an outpatient Pediatric review and her weight has dropped again (weight =39.2kg, BMI = 14.8: 3rd centile). The family is very worried and a decision of admission for physical observation and stabilization is made. Medical examination and para-clinical investigations are normal. A new referral to Liaison Psychiatry is issued.

Table 2. Growth History (06.11.18 - 21.05.2019)

Location	31rd Hospital Admission	Pediatric Review	Pediatric Review	Pediatric Review	Pediatric Review
Date	06.11.18 Start Mirtazapine	20.11.18	24.12.18	15.01.19	21.05.19
Age (years and months)	12 years 9 months	12 years 9 months	12 years 10 months	12 years 11months	13 years 3 months
Weight (kg)	39.2 (24.51st centile)	41.2 (33.72nd centile)	45.0 (50th centile)	46.0 (52.79th centile)	49.5 (61.79th centile)
Height (m)	1.627 (84th centile)	1.627 (84th centile)	1.63 (83.6th centile)	1.63 (82.4th centile)	1.65 (84.6th centile)
BMI (kg/m²)	14.8 (3rd centile)	15.6 (8th centile)	16.9 (24th centile)	17.3 (29th centile)	18.2 (40th centile)

To the psychiatrist, Alayah essentially complains of constipation, nausea and abdominal cramps mostly at night. She explains that she gradually "slipped back" into her old habits of eating very small amount of food. She says she is constipated and that she cannot eat during the day (fear of being sick), but that she feels "ravenous" in the evening and eats only then. Subsequently she sleeps quite badly, often wakes up and spends hours on the toilet during the night. She says this is impacting on her concentration and that she feels tired and stressed during the day, which prevents her from eating before the evening and so the cycle continues.

Parents explain that they could not "stick to an eating routine" as they have been travelling abroad and that Alayah has refused to attend the GP to get her weight monitored. No contact was made with the Primary Care Psychology Services.

The diagnostic of ARFID is reiterated and a multi-disciplinary care plan similar to the previous one (partial hospitalization and FBT) is put in place for 2 weeks after which she continues to attend multi-disciplinary interventions in WGH as an outpatient.

This time, the patient and her family are agreeable to try medication. Various options are considered but Mirtazapine is started (7.5 mg nocte).

Mirtazapine enhances serotonergic and noradrenergic neurotransmission and also has some anticholinergic and antihistaminic effects (Hsiu-Wen & Tien-Chun 2011). It promotes appetite and weight gain, decreases nausea and vomiting and improves gastric emptying, which helps a lot with feeding issues (Gray et al. 2018). It also improves sleep and reduces anxiety (Mushtaq 2018). Of course, it is an off-label approach in the pediatric population but it was reported to have been successfully used in at least 2 other ARFID cases in children (Thomas et al. 2017, Tanidir & Hergüner 2015).

For Alayah, this worked a treat and helped her in many ways. Indeed, she reported sleeping much better at night time (falling asleep faster and not waking up during night time) and feeling less tired and less stressed during the day. She also noted that she did not feel nauseous anymore and that she was actually hungry during the day. She started to eat more regularly and her constipation became less symptomatic.

As per table 2, once on Mirtazapine and while benefiting from the multi-disciplinary care plan, Alayah's weight perked up and her BMI reached and remained in the healthy range. 6 months after starting the Mirtazapine, it is still early days, but she certainly got into a healthy eating routine and does not avoid food anymore (weight =49.5kg, BMI =18.2, 40th centile). She has restarted gymnastics and continues to attend multi-disciplinary reviews in WGH (pediatrician, dietician, psychiatrist and psychologist) (FBT) as an outpatient.

DISCUSSION

Psychopharmacology in ARFID

ARFID is a relatively new diagnosis category in psychiatry and to date, literature describing this disorder and guiding pharmacological treatment is limited. It certainly appears as a multi-facetted disorder that requires a multi-disciplinary approach.

Currently, the best clinical approach seems to focus on specific symptoms that may contribute to the condition and to identify and treat comorbid psychiatric conditions that may be exacerbating the patient's symptoms of food avoidance/restriction and overall distress. Concurrent anxiety disorders are the most prevalent but major depressive disorder is also common among patients with ARFID (Nicely et al. 2014).

From a psycho-pharmacological point of view, there are no established guide-lines. In a case of ARFID, the first aim is generally to restore a healthy weight for the patient and also to reduce the level of stress/anxiety connected to the food intake. Targeted symptoms that may be treated with medication include severe situational anxiety about eating, as well as decreased appetite or early satiety resulting from chronic undernourishment (Thomas et al. 2017). It is important to specify that using a pharmacological agent should always be carefully considered and associated to other treating approaches (including behavioral treatment and FBT) and multi-disciplinary interventions.

Benzodiazepines (e.g. Lorazepam) can be considered for some extremely tense patients in the (very) short term in order to reduce food-related anxiety; for example, when introducing the meal plan system. Cyproheptadine has been identified as safe and effective for use in young children with eating difficulties related to low appetite (Bryant-Waugh 2019). Olanzapine at a low dosage has been used in order to reduce anxiety, stimulate the appetite and facilitate the eating process in young patients with ARFID. One recent study even mentions the benefit of using D-cycloserine to assist in exposure interventions in anxiety disorders (Sharp et al. 2017).

In a Pediatric population, Selective Serotonin Reuptake Inhibitors (e.g. Fluoxetine, Sertraline) are usually the first line treatment for anxiety and depression, though because of some of their potential side-effects, especially at the beginning of the treatment (nausea, vomiting, reduced appetite), they could exacerbate the difficulties in a patient with ARFID and actually contribute and/or complicate to the feeding/eating issues.

In this case, we decided to use Mirtazapine as a pharmacological adjuvant in the treatment of ARFID, because it was actually ticking a 'lot of the boxes' as it helped not only regarding anxiety and sleep but also reduced her nausea, helped her feel hungry and improved her stomach emptying process.

CONCLUSIONS

In 2013, the DSM 5 introduced the concept of ARFID which covers a rather large and heterogeneous list of eating/feeding symptoms; therefore, it is sometimes considered as "an umbrella diagnosis". The complexity of this pathology resides in its various presentations and aspects (even though some subgroups were identified, ARFID remains a rather imprecise entity). Its diagnosis and treatment must involve a multi-disciplinary team and a poly therapeutic input in order to address these multiple facets; the pediatric treatment seems obvious but so is the behavioral treatment, the dietetic approach, the mental health (psychiatry/psychology) input as well as individual, family and group treatment. Psychopharmacology can be very useful in some cases but requires to be thorough fully considered.

One crucial imperative is that "everybody participating must be on the same page". It is particularly important to "train the trainer" in order for consistency and sustainability of the results. Therefore, beside working with the patient, it is essential to also work with the staff and the family in order to reduce their stress levels and provide a neutral environment in which the patient will work on restoring a healthy weight.

Different treatment modalities can be put in place in order to optimally support the patient but also to help his rehabilitation and his connection to the real world. In our case, Alayah started to be fully hospitalized on a Pediatric Ward, but progressively, she started to spend gradual planned and regular time at home, with her family and even in school, while coming back to the clinic for days of intensive multi-disciplinary interventions (Partial Hospitalization Model). These outings are extremely motivating for the patient and the family, and can help to reduce the anxiety and minimize the medicalization of ARFID. It is also helping to build confidence in how to manage situations out of hospital, both for the parents and the patient.

Finally, a multi-disciplinary outpatient follow-up 'seals the deal' and helps monitoring the progress and adjusting the interventions while keeping the patient in a healthy place.

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