

The importance of specific rehabilitation for an obese patient with idiopathic intracranial hypertension: a case report

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Idiopathic intracranial hypertension (IIH) is associated with obesity, and weight loss is important to reduce intracranial pressure and improve visual function. A 38-year-old woman with IIH followed an extreme diet, which resulted in 30% weight loss (BMI moved from 34.9 to 24.6). Weight loss resulted in a significant reduction of papilloedema, normalization of intracranial pressure and improvement in headache pattern, but also induced a state of initial malnutrition, relevant depression and disability. She was discharged with the indication to start a controlled diet and improve physical activity: clinical situation get back to stability, with the patient losing further weight (BMI = 21.8) through a balanced diet and moderate physical exercise. Obese patients with IIH should be offered a comprehensive treatment approach consisting of diet and nutritional support, psychological counselling, indication to increase physical activity and, when appropriate, a specific

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Introduction

Idiopathic intracranial hypertension (IIH) is a condition that occurs as a result of increased intracranial pressure (ICP) of cerebrospinal fluid with no space-occupying lesions. It mostly occurs in young obese women and usually presents with headache, tinnitus, transient visual obscuration, blurred vision, diplopia and papilloedema (Wakerley *et al.*, 2015). The most serious negative outcome is blindness: it occurs in 6–10% of patients and 1–2% of new cases of IIH are at risk of becoming blind (Best *et al.*, 2013).

Management of IIH is highly variable and requires the joint intervention of different professionals: options include pharmacological treatment (with acetazolamide as the first-line choice, and furosemide and topiramate as the second-line choice), neurosurgical approaches and rehabilitation for weight reduction (Markey *et al.*, 2016). Weight loss is associated with IIH remission and resolution of papilloedema (Subramaniam and Fletcher, 2017), but extreme weight loss, eventually driven by the fear of blindness, may have negative consequences as it can lead to loss of muscle and bone mass and increased cardiovascular risk (Chaston *et al.*, 2007; Lee *et al.*, 2010).

Case report

We report the case of a 38-year-old woman, with a diagnosis of IIH made elsewhere in February 2016 and admitted to

our institute in October 2016. At the time of diagnosis, ICP was 235 mmH₂O – that is, in that ‘grey zone’ where IIH diagnosis may be made in the presence of specific clinical and MRI findings, as suggested by Friedman *et al.* (2014). Some of these findings were observed in this patient: bilateral papilloedema, more severe on the right eye, bilateral scotoma, transient visual obscuration and vertigo, daily headache with nausea and photophobia, empty sella with hypophysis flattening, distension of the perioptic subarachnoid space and tortuosity of the optic nerves. Her weight was 101 kg and BMI was 34.9: she was prescribed acetazolamide 750 mg/day, which was not tolerated, and was switched to topiramate 100 mg/day. She was dismissed with the indication to lose weight.

On this occasion, no advice on the importance of a structured weight loss programme was given to the patient. Consequently, she only started a very restrictive diet not under medical control by the end of April 2016, she achieved marked weight reduction and lost 18 kg (BMI = 28.7). A second MRI showed no changes, whereas ICP increased to 340 mmH₂O. Topiramate was interrupted and 750 mg/day acetazolamide was reintroduced.

At the time of admission to our institute, the total weight loss was 30 kg (BMI = 24.6). MRI scan showed no variation again, ICP was 180 mmH₂O and papilloedema had resolved

on the left eye and reduced to a mild one on the right eye. Blood triglyceride level was 36 mg/dl and transferrin was 176 mg/dl – both being below the normal ranges (50–160 and 200–400 mg/dl, respectively) – whereas the total protein level was 6.9 g/dl, that is, close to the lower bound of normal range (6.0–8.6 g/dl); finally, she had moderate arterial hypotension (90/65 mmHg). These clinical findings were suggestive of the risk of an initial malnutrition state.

She participated in our research on IIH management (approved by the Institute's ethical committee) and underwent a psychological evaluation that comprised some tests [Beck Depression Inventory (BDI-II); State-Trait Anxiety Inventory (STAI); WHO Disability Assessment Schedule (WHODAS 2.0)] and a clinical interview with a psychologist (Raggi *et al.*, 2017). She reported that during her adult life, her weight had fluctuated between 75 and 90 kg, and that such variations were because of inadequate eating behaviours, such as overeating when 'bored or angry', with frequent binge-eating episodes. She engaged in extreme dieting because she was scared of becoming blind and of being unable to care for her baby. Psychological tests were suggestive of moderate depression and anxiety – BDI-II score of 24, STAI *T*-score of 60; she reported constant tiredness and difficulties with handling daily life activities, with a WHODAS 2.0 score of 36.1, three-times higher (Federici *et al.*, 2009). At the time of discharge, we advised her to avoid further uncontrolled weight loss, visit a dietician to follow a balanced diet and start practicing moderate physical activity to gain muscle mass, that is, to begin with a comprehensive rehabilitation approach for weight management.

In January 2017, papilloedema and MRI findings were stable, and headache frequency was reduced to 15 days/month without nausea and photophobia: she followed a dietician-prescribed diet and practiced moderate physical activity since December 2016. At the last clinical control, on July 2017 she was continuing acetazolamide 1000 mg/day, the frequency of headaches was reduced to 6/month and she had no visual disturbances. Her weight was 63 kg (BMI=21.8) and this had been achieved through a balanced diet and 3 h/week of moderate exercise. Haematological tests were all in the normal range (with the exception of triglycerides: 47 mg/dl, normal value: 50–160) and the same was found for BDI-II (score = 1), STAI (*T*-score = 36) and WHODAS 2.0 (score = 8.3).

Discussion

Resolution or improvement of papilloedema and favourable visual outcomes are common among IIH patients who undergo weight reduction (D'Amico *et al.*, 2014; NORDIC Idiopathic Intracranial Hypertension Study Group Writing Committee *et al.*, 2014; Subramaniam and Fletcher, 2017). Nonetheless, patients have to be advised to avoid a 'do it yourself' diet and, to achieve such an objective, clinicians should bear in mind the importance of a comprehensive rehabilitation approach to weight loss.

Did anyone directly scare her about the possibility of becoming blind? Irrespectively of the response to such a question, this is what she felt. Worsening of visual functions was an actual risk and was correctly identified by physicians at the time of IIH diagnosis: the patient reached her maximum weight and was frankly obese and, on the basis of the description she provided of her eating behaviour, we can reasonably presume that she had a comorbidity for binge-eating disorder, a psychiatric condition that has been found in 15% of the patients with IIH from a small series (Raggi *et al.*, 2017). The pharmacological treatment that was prescribed was therefore correct: acetazolamide had to be prescribed as worsening of visual functions is an actual risk for IIH patients (Best *et al.*, 2013; Subramaniam and Fletcher, 2017). However, despite what she was advised, at a more subtle level, she understood that 'if I do not change, I might become blind and will not be able to care for my baby'. For this reason, besides providing advice on the importance of 'reversing the course' with respect to her weight, an indication for comprehensive management should have also been provided. Weight loss alone is not enough and pharmacological psychological interventions for associated clinical conditions are required. These should include some of the following: appetite-suppressing drugs, psychological support for depression and eating behaviour and physical activity to improve muscle tone. Obese patients with IIH, on the basis of clinical history and the presence of comorbidities have higher disability (Sirtori *et al.*, 2016) and should be offered a specific multidimensional rehabilitation approach consisting of diet and nutritional support, psychological counselling and physical activity (Capodaglio *et al.*, 2013). Accessible devices for rehabilitation, such as commercial video games, could also be taken into account to limit patients' engagement in inadequate 'do it yourself' approaches or maintain rehabilitation benefits (Bonnechère *et al.*, 2016). The multidisciplinary approach to obesity treatment is the key to achieve permanent lifestyle modifications and reduce relapse. However, the presence of several comorbidities requires close monitoring by the rehabilitation team and a certain flexibility in the clinical strategy, with the ability to modify the combination of interventions during the follow-up. This case also highlights that some mistakes have been made at the time of diagnosis as she neither received dietary indications nor was prescribed any physical therapy, and her extreme weight reduction was achieved by an almost complete elimination of carbohydrates and proteins. Such a behaviour, if not interrupted, would have exposed her to a high risk of developing malnutrition.

Conclusion

The long-term positive outcome in this patient is likely because of a combination of different factors: reintroduction of acetazolamide; weight loss, likely achieved by a combination of diet and increased physical activity (Madjd *et al.*, 2016);

and, finally, the patient's ability to make positive changes in her health habits, which were also likely to produce positive psychological effects. At the same time, major risks to the patient's health could have been avoided through an appropriate management of weight loss. What this case teaches us is that obese patients with IIH, which might have several comorbidities, should be offered a comprehensive rehabilitation approach consisting of diet and nutritional support, psychological counselling and physical activity.

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Conflicts of interest

There are no conflicts of interest.

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