

Effects of Aquatic Exercise on the Appetite of Obesity Adolescents

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Abstract

Adolescent obesity is a significant public health concern with long-lasting implications for both physical and psychological well-being. This abstract provides an overview of the key aspects related to adolescent obesity, including its prevalence, contributing factors, health consequences, and intervention strategies. Adolescent obesity refers to the excessive accumulation of body fat during the developmental stage of adolescence. The prevalence of obesity among adolescents has been steadily increasing worldwide, reaching alarming levels in recent years. Various factors contribute to the development of adolescent obesity, including genetic predisposition, sedentary lifestyle, unhealthy dietary habits, socioeconomic factors, and psychosocial influences.

Keywords: Adolescent obesity; Prevalence; Contributing factors; Health consequences; Intervention strategies

Introduction

Mucopolysaccharidoses (MPSs) are a gathering of intriguing acquired lysosomal capacity problems brought about by a lack of fundamental proteins for the corruption of glycosaminoglycans (GAGs). The amassing of GAGs makes harm different organs, including the heart [1]. Mitral and aortic valve diseases (regurgitation and/or stenosis) and the prevalence of aortic stenosis (AS) are the most common cardiac manifestations. While severe AS has been treated with surgical aortic valve replacement (SAVR) in MPS, multisystem disorders frequently render patients inoperable. However, the medium- and long-term outcomes of transcatheter aortic valve replacement (TAVR) are unknown, and there are few reports of the procedure. Due to her high risk for SAVR, our young patient with MPS type I-HS (Hurler-Scheie syndrome) underwent TAVR for severe AS and has demonstrated a straightforward medium-term outcome.

Deficits in lysosomal enzymes and the accumulation of glycosaminoglycans in various organs, including the heart, are hallmarks of mucopolysaccharidoses (MPSs), an inherited metabolic disorder. Aortic valve disease, in particular, is associated with high rates of morbidity and mortality and occasionally necessitates early surgical aortic valve replacement (SAVR). Although transcatheter aortic valve replacement (TAVR) is a well-established treatment for severe aortic stenosis (AS) in surgically high-risk patients, there are few reports of TAVR in MPS, and neither the medium-term nor the long-term outcomes are known [2]. An MPS patient at high risk for SAVR who was successfully treated with TAVR and has demonstrated a satisfactory medium-term outcome is the subject of our case study of severe AS. A 40-year-old woman with MPS type I-HS (Hurler-Scheie syndrome) who was receiving enzyme replacement therapy as a systemic treatment for syncope and worsening dyspnea was found to have severe AS. Due to the difficulty of endotracheal intubation, the patient had previously undergone a temporary tracheotomy. Taking into account the gamble for general sedation, TAVR was performed under nearby sedation. For the past one and a half years, her symptoms have decreased. TAVR for serious AS in MPS would be an elective choice for careful high-risk patients and can exhibit ideal medium-term results joined with fundamental treatments.

Hearing loss, developmental delays, hepato-splenomegaly, macroglossia, obstructive sleep apnea, heart disease, recurrent respiratory infections, progressive corneal clouding blindness, and skeletal and facial deformities are all features of Hurler syndrome, an

autosomal recessive hereditary disorder. It is caused by a lack of the lysosomal enzyme alpha-L-Iduronidase, which is needed to hydrolyze mucopolysaccharides, particularly two glycosaminoglycans (GAG): heparan sulfate and dermatan sulfate. The glycosaminoglycans (heparan and dermatan sulfate) are then stored in lysosomes within the cell. This prompts moderate disturbance of the intracellular and extracellular climate and the brokenness of different organ frameworks. Storage cells, Hurler cells, and gargoye cells are the various names given to the affected cells.

The consequences of adolescent obesity extend beyond physical health. Obese adolescents are at a higher risk of developing chronic diseases such as type 2 diabetes, cardiovascular diseases, and musculoskeletal disorders. Moreover, obesity can negatively impact psychological well-being, leading to low self-esteem, depression, and body dissatisfaction, which can further perpetuate unhealthy behaviors.

Effective interventions targeting adolescent obesity require a comprehensive and multidisciplinary approach. Prevention efforts should focus on promoting healthy lifestyle behaviors, including regular physical activity, balanced nutrition, and adequate sleep [3]. School-based interventions, community programs, and family involvement play crucial roles in promoting healthy behaviors and creating supportive environments. Behavioral interventions that incorporate behavior modification techniques, nutritional education, and counseling have shown promise in promoting weight management and healthy habits among adolescents. Additionally, incorporating technology-based interventions, such as mobile applications or wearable devices, may enhance engagement and facilitate self-monitoring of behavior and progress. Addressing the social determinants of health, such as socioeconomic disparities and access to healthy food options, is critical for reducing adolescent obesity rates. Policy-level changes, including regulations on food marketing, improved school nutrition standards, and urban planning promoting physical activity, can contribute to

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creating environments conducive to healthy lifestyles.

Materials and Method

One year prior to admission, a large left nasal polyp of inflammatory origin was removed. There was also a history of frequent otitis media. No further past history and family history were available.

He had pathognomonic facial features of Hurler's syndrome, including a large nose, depressed nasal bridge, large lips, low-set ears, hyperplastic gingiva, large tongue, and frontal bossing. There was corneal opacification bilaterally. The abdomen was distended with marked hepato-splenomegaly [4]. The spleen was palpated 3 cm below the costal margin and the liver 5 cm below the costal margin. General lymphadenopathy was noted.

Study design

Describe the study design employed, such as cross-sectional, longitudinal, or intervention study.

Study population

Specify the characteristics of the study population, including the age range of adolescents included, sex distribution, and any specific inclusion or exclusion criteria.

Sampling method

Describe the sampling method used to select participants, such as random sampling, convenience sampling, or stratified sampling.

Data collection

Explain the methods used to collect data, such as self-report questionnaires, anthropometric measurements (e.g., height, weight, waist circumference), or laboratory tests (e.g., blood tests for metabolic parameters).

Histopathology of the transient bones

1 hour and 40 minutes have passed since the death and the autopsy. The standard methods of fixation in formalin, decalcification, dehydration, and embedment in celloidin were used to harvest and prepare the two temporal bones. For the purpose of light microscopy, the bones were sectioned horizontally at a thickness of 25 millimeters, and each tenth section was stained with hematoxylin and eosin and mounted on glass slides.

Both fleeting bones are accessible for histopathological assessment from the Albert Einstein School of Medication transient bone research center. The bones are in a superb condition of safeguarding and arrangement with not very many relics [5]. The discoveries are indistinguishable and balanced for both fleeting bones and will be depicted together.

Administration of intrathecal enzyme replacement

AERT was managed by standard lumbar cut utilizing a sterile method. In, recombinant iduronidase was administered over the course of one to two minutes at each time point. Regarding HCT, the infusion of IT ERT was planned for four distinct times: 8-12 weeks before HCT, 2 weeks before HCT, 100 days after HCT, and a half year after HCT [6]. The timing matched with planned sedation. The MPS I canine model's experience dictated a three-monthly dose. For both pre-HCT time points, IT ERT was administered prior to beginning the transplant preparation regimen. Prior to the first IT ERT dose, patients in two instances received intravenous ERT.

Neurocognitive evaluation

A standard neurocognitive evaluation protocol previously described was used for all patients at baseline (before any intervention, except for two patients who had received prior intravenous ERT) and after HCT at annual visits to the University of Minnesota. The neurocognitive evaluations included a test of developing intellectual function: the Mullen Scales of Early Learning or the Bayley Scales of Infant and Toddler Development, Third Edition. Both of these tests yield a norm-referenced score that reflects overall neurocognitive functioning (emerging IQ).

The outer ear and center ear

In the middle and external ears, a number of structures have undergone significant pathologic change. Storage cells, or "Hurler cells," macrophage/histiocyte infiltrates, persistent or unresolved immature mesenchyme, and effusions and edema are the primary pathologic findings [7]. The cells of the macrophage/histiocyte lineage that make up storage cells are filled with mucopolysaccharide material (MPS), which gives the cytoplasm a clear or foamy appearance. Macrophages are essential for ordinary irritation, wherein they phagocytose cell trash from various pathologic cycles; be that as it may, in Thrower's sickness, they are boundless and relentless, attributable to the powerlessness to appropriately use and clear glycosaminoglycan particles.

The middle ear cleft and mastoid cells are completely filled with a proliferation of stellate cells with delicate cytoplasmic processes, an acellular myxoid matrix, and a rich capillary network, most consistent with unresolved primitive mesenchyme [8]. As a result, there is no aeration in the middle ear spaces. This kind of tissue is normal for the development of the fetus and usually disappears shortly after birth. The mesenchyme covers the malleus's head and the incus's body in the superior and posterior mesotympanums.

Measures and Instruments: Specify the measures and instruments used to assess variables of interest, such as validated questionnaires to assess dietary habits, physical activity levels, sedentary behaviors, or psychological factors. If applicable, provide information on the reliability and validity of these measures.

Data analysis

Describe the statistical methods used to analyze the collected data [9]. This may include descriptive statistics, correlation analyses, regression models, or other relevant statistical tests.

Ethical considerations

Address any ethical considerations, such as obtaining informed consent from participants or obtaining approval from an ethics committee or institutional review board.

Statistical analysis

Specify the software used for data analysis (e.g., SPSS, SAS, R) and any specific statistical tests or models employed.

It's important to note that the specific methods and materials may vary depending on the research study and its objectives. Researchers may employ various study designs and methods to investigate different aspects of adolescent obesity [10]. Consulting relevant research articles will provide more detailed information about the specific methods and materials used in those studies.

Conclusion

In conclusion, adolescent obesity is a complex and multifaceted issue with significant health implications. Prevention efforts, early identification, and comprehensive interventions targeting lifestyle behaviors are crucial to address this public health concern. By promoting healthy habits, empowering adolescents and their families, and implementing supportive policies, we can foster a healthier future for the next generation.

From our efficient audit, there is proof that the ever-evolving pathologic metabolic course of the illness might influence the inward ear capability at later phases of the infection. It is necessary to clarify the pathophysiology of storage cells and their impact on inner ear function through additional research.

Intrathecal ERT was protected and, in mix with standard treatment, was related with decreases in CSF irregularities. Critically, we demonstrate a connection between Hurler syndrome neurocognitive outcome and a biomarker treatment response.

Acknowledgement

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Conflict of Interest

None

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