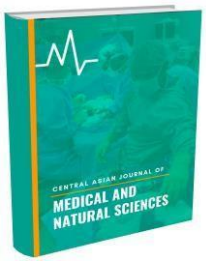

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Article

Biochemical and Physiological Parameters in Obese Children of Karbala City

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Abstract: This study examines biochemical and physiological parameters in obese children in Karbala city. Obesity in children, defined as an excessive accumulation of body fat, is linked to numerous health complications, including diabetes, cardiovascular diseases, and respiratory disorders. The study involved 36 samples from children, divided into two groups: 20 non-obese and 16 obese children. Tests conducted included random blood sugar, triglycerides, and complete blood count (CBC). Results indicated significant differences between obese and non-obese children in terms of weight, triglycerides, and hemoglobin levels. The study concludes that obesity significantly impacts children's health, leading to increased risks of various chronic diseases and highlighting the need for preventive measures.

Keywords: Obesity, children, Karbala, biochemical parameters, physiological effects

1. Introduction

Obesity

Obesity in children is the process of an abnormal increase in fat accumulated in the abdominal area or other parts of the body. Obesity is a chronic disease that occurs when a child's weight exceeds a healthy weight appropriate for his age. Obesity has many harmful effects, especially on children, on all body systems such as the heart, lungs, digestive system, liver, kidneys, hormonal regulation, and blood sugar control rate.

Obesity leads to a shortened lifespan due to its contribution to many chronic medical conditions such as diabetes, cardiovascular disease, respiratory disease, and psychological and social conditions.

It also causes some types of cancer, such as breast cancer.[1][2]

The reasons that cause overweight and obese childhood:

1. Food intake these include choosing un healthy [highly fat and sugary] foods.
2. Physical activity children are less active than they were in the past.
3. Spending a lot of time of the day on television using computers and other electronic games that is have many effects on theirs weights.
4. Overweight parents family's eating patterns can have a major influence on whether a child maintains a healthy weight
5. Genetics – some rare gene disorders cause severe childhood obesity. [3]

Prevention of Obesity in Children

1. Lifestyle Change :

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a. Reduce eating fast food

Especially foods rich in sodium, fats, and unnecessary calories

b. Playing sports

It is recommended that children who suffer from obesity exercise for about 15-30 minutes a day

c. Follow a healthy diet

A healthy diet full of vegetables and proteins instead of fats and sugars

Get enough sleep.[4][5]

2. In Addition to Drug Treatment with the Advice of a Doctor

Risks of living with obesity

These include:

a. Sleep apnoea
b. Type tow diabetes
c. Coronary heart disease
d. Cancer, such as breast cancer and bowel cancer
e. stroke
f. Liver health problem
g. Respiratory disorders
h. Cardiomyopathy [6]

The relationship between obesity and diabetes in children:

Children with obesity have an increased risk of developing diabetes more than others.

1. Symptoms

Diabetes is widely spread among adults, but increase in the number of children with type 2 diabetes all over the world, and there is a great risk to the health ofthese children from this disease. On his part, there are several symptoms that appear on obese and diabetic young children.[7]

These include:

2. Frequent urination

An increased feeling of thirst, which results from dehydration caused by frequent urination.Exhaustion and fatigue resulting from the body's inability to use blood sugar properly. [8] Blurred vision caused by a lack of fluid in the lens of the eye. Darkening of the skin associated with cases of insulin resistance.[9]

2. Materials and Methods

36 samples were collected from children Hospital in Karbala, 20 normal samples from children without obesity and 16 abnormal samples from children with obesity, and after collecting the samples, we performed tests on samples for normal children and abnormal children .The tests that we performed are the sugar test, the triglyceride test, and the complete blood count test.

Sugar Test (Random):

1. Material
2. Sample (serum)
3. Plane tube
4. Enterifuge
5. Micropipette

6. Suger stander
7. Water bath
8. Spectrophotometer

Procedure

1. Take the blood and put in the tube does not contain any anticoagulants
2. We put the blood in the centrifuge for 5 minutes, 2500 rpm
3. We take serum only by micropipette and put in new test tube.
4. Take 1000 micro liters of the stander sugar and put it in a new tube
5. Take 10 micro liters of serum and put it in the tube that contains the stander.
6. We put the tube in a water bath for 10 minutes
7. Then read the result by spectrophotometer.
8. Triglyceride test (TG)

Material

1. Sample (serum)
2. Plane tube
3. Centerifuge
4. Micropipette
5. Triglyceride stander
6. Water bath
7. Spectrophotometer

Procedure

1. Take the blood and put in the tube does not contain any anticoagulants
2. We put the blood in the centrifuge for 5 minutes, 2500 rpm
3. We take serum only by micropipette and put in new test tube.
4. Take 1000 micro liters of the stander Triglyceride and put it in a new tube
5. Take 10 micro liters of serum and put it in the tube that contains the stander.
6. We put the tube in a water bath for 15 minutes
7. Then read the result by spectrophotometer
8. Complete blood count test (CBC)

Material

1. Sample(whole blood)
2. EDTA tube
3. Vortex
4. CBC
5. Device

Procedure

1. We take the blood from the patient and put it into his EDTA tube.
2. We put the tube in the vortex device to shake the sample slightly for 10 minutes
3. We take a blood tube and put it into the CBC device
4. We read the results from the CBC device itself.

Biostatical Analysis :

The comparison between obesity and normal children was done using the t-test of two independent samples.

Table 1 : group statistics of the tests

1. When Significant read 0.000, that means there's a real difference

Example : the weight

2. When Significant read value non zero that mean not found a real difference

Example Age 0.239 that mean not found a real difference (approximate value).

Table 1 : shows some physiological parameters in obese children compared to normal children

Table 1. Of Normal Children.

HB	Triglyceride	sugar	Body mass	weight	long	Age	Name	ت
11.33	190	120	15.625	10	80	2.5	ايه حسين	1
12	95	148	11.1111111	25	150	7	فاطمه حسين	2
11.33	77	60	20.0777202	15.5	85	4	فاطمه صلاح	3
15.33	434	160	20	20	100	5	زيد علي حمزه	4
12.66	350	128	34.375	22	80	6	ذو الفقار مصطفى	5
13.33	147	92	25	25	100	6	ازل علي	6
12	420	120	39.0625	25	80	7	نرجس محمد احمد	7
12.66	98	148	20	45	150	13	مريم ميثم	8
12	168	132	12.3809524	26	145	5	اركان اسامه	9
11.66	105	124	20.661157	25	110	10	مريم محمد	10
12.1	67	94	12.4444444	28	150	9	فاطمه احمد	11
11.9	70	98	12.2309198	25	143	9	يعقوب يقين	12
12	130	76	11.9047619	25	145	7	قاسم حيدر	13
11.3	154	92	10.8108108	24	149	8	رقيه حليم	14
10.9	55	107	8.65800866	20	152	12	نرجس هاشم	15
12.6	67	92	11.9047619	25	145	11	زهراء احمد	16
12.1	38	114	10.2040816	20	140	7	مريم عقيل	17
10.7	50	96	11.5789474	22	138	7	اكرم حسين	18
11.8	94	100	12.5	30	155	10	نرجس محمد	19
12.3	47	44	16.666667	38	151	9	فاطمه احمد عبد الحسين	20

Table 2. Of Abnormal Children

HB	Triglyceride	sugar	Body mass	weight	long	Age	Name
11.66	385	140	19.5555556	36	90	7	فاطمه مرتضى
13.6	135	104.4	28.1385281	65	157	12	مصطفى مازن عبدالله
13.4	390	90	26.2222222	15	50	1.5	رقيه صبيح
10.7	140	72	22.9591837	44	150	9	حنين علي
12.33	147	76	17.316073	65	152	12	يوسف فرزدق
13.3	125	200	30.9090909	59	150	11	محمد حيدر
12.6	179	102	20.9183673	45	140	8	روان فاضل
10.5	81	98	26.4227642	40	152	11	رقيه احمد
12.8	72	90	22.3809524	68	150	12	حمزه ماهر
11.7	80	70	22.3577236	41	140	7	اسراء كرار
11.8	233	120	24.122807	65	157	11	نرجس صفاء
15.3	179	100	23.8095238	47	145	9	علاء هاشم
10	158	102	74	55	157	9	حسين زهير
11.2	63	91	44.4444444	55	151	6	ام البنين اياد
12.2	54	76	26.4227642	50	145	10	حسن صالح
12.1	488	96	60	74	100	12	مؤمل عصام

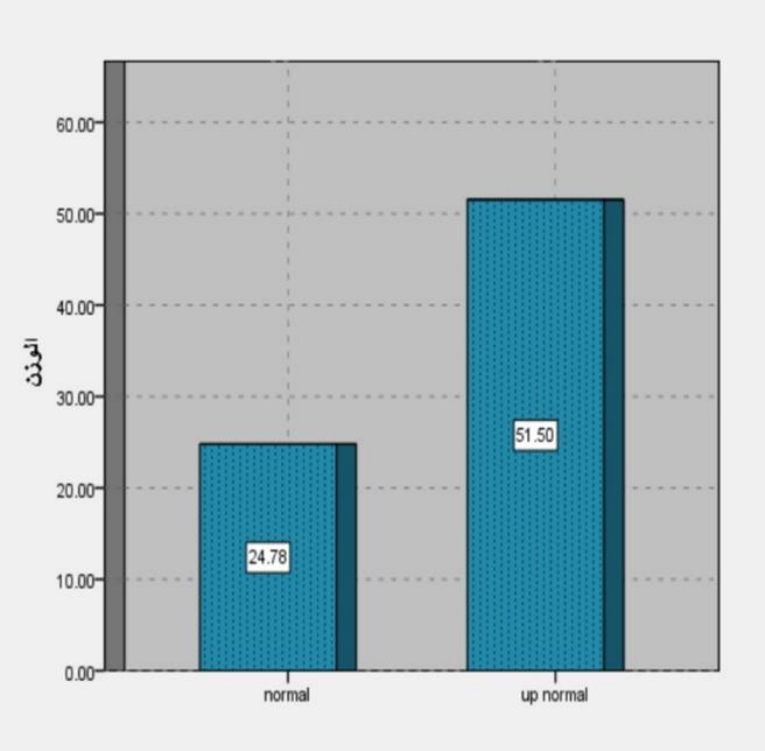

Figure 1. We observed increased in the weight in the obese children (abnormal) 51.50 compared with weight in normal children 24.78

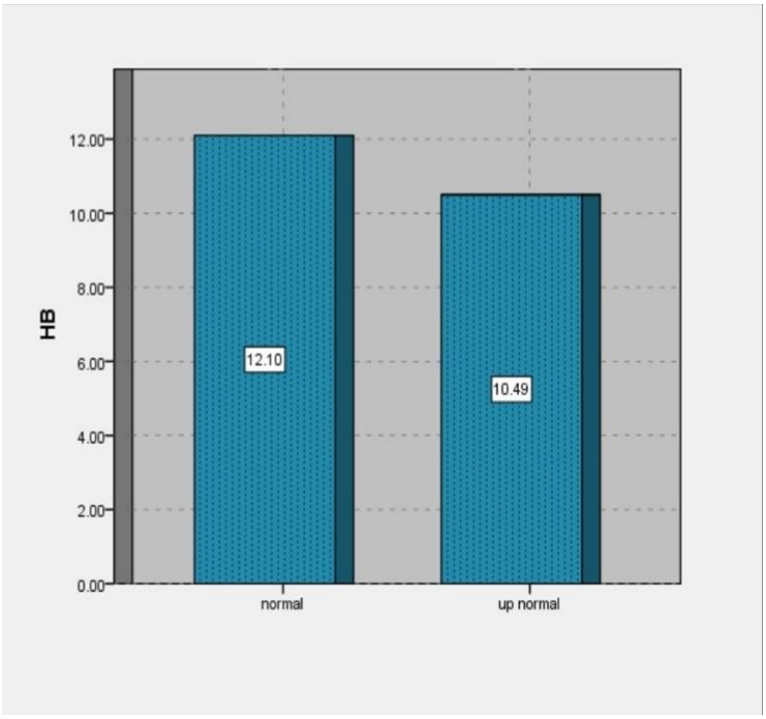

Figure 2. We observed increased in hemoglobin HB value of normal sample 12.10 compared with abnormal sample the obese children 10.49

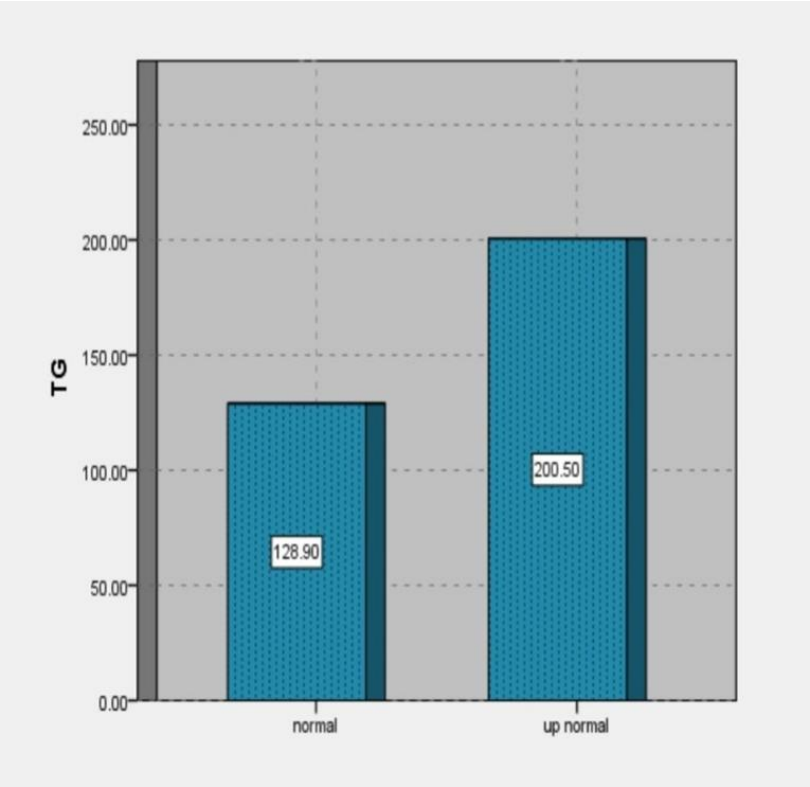

Figure 3. We observed increased in the Triglyceride value of abnormal sample in the obese children 200.5 compared with normal 128.90

3. Discussion

the relationship between obesity and fat of the Liver : Fat accumulation in the liver is depend on body mass And intra-abdominal and overall obesity and characterized by insulin resistance in normal weight and moderately overweight subjects. Increased VLDL hepatic is associated with insulin resistance and the high rate of triglyceride TG turnover is greater than the ability to secrete.[10][11]

The increase in serum triglycerides is cause the increased hepatic production of VLDL particles and a decrease in the triglyceride rich lipoproteins.

In obesity, triglycerides and LDL or "bad"—cholesterol tends to be high. HD is too low. This increases your risk of heart disease heart attack and strok .and The relationship between obesity and hemoglobin Obesity being a risk factor for many lifestyle disease, is to affect iron absorption and level of hemoglobin. obesity is may be associated with the features of anemia of inflammation, specifically high serum ferritin and low serum iron and HB[12] . And obesity affect the hematologic system Obesity is also associated with increased platelet count and an high risk for venous thromboembolism (VTE). Lastly, the association between obesity, iron deficiency and red blood cell counts may be present but remains uncertain.[12][13]

4. Conclusion

We conclude that obesity effects on children as well as adults. Where obese children suffer from many diseases such as heart disease, high blood sugar level, diabetes and hypertension diseases, and obesity may lead to death, as it was found that most

deaths of children are caused by excessive obesity that leads to damage to the heart muscle or damage on liver muscle or damage to the lungs and found that most children Obese people have asthma, respiratory diseases and allergies, because obesity affects the respiratory system. Obesity is a fatal disease and most children die from obesity.[14][15]

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