Relationship between polycythaemia with increased lipid profile

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Abstract:

Background" Polycythemia" is depending on or absolute enlargement in the number of circulating RBC resulting in an increased "PCV" (packed cell volume) **,** relationship with suitable patients can have lipideamia|

The target in this study relationship between polycythaemia with increased lipid profile .

Methodology measured the number of mingle RBC ensuing in an increased PCV**;** Relationship with fit people can have high levels lipid profile.

Results: This study involved research 64 patients (average age between 20 – 35 years) suffering from polycythaemia " diagnose by lipid profile performed pcv test (packed cell volume) "and perform lipid profile test (Triglyceride , cholesterol , LDL , HDL) and appearance of the results found relationship between increased levels of lipid and polycythaemia disease . There results are (cholesterol %45) .
(Triglyceride%58)(LDL%39)(HDL).%22)

Conclusion from this study we can conclude from that the most polycythaemia patient blood stream very slow due to the cholesterol deposit to the vine wall.

Keywords: Polycythemia, lipid profile.

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العلاقة بين ارتفاع نسبة كريات الدم الحمراء وزيادة الدهون الكلية بالدم
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الكلمات المفتاحية:زيادة كريات الدم الحمراء,الدهون الكلية

الخُلاصة :من الامراض الاكثر شيوعا في العالم هو زيادة في كريات الدم الحمراء والمقارنة مع الدهون الكلية لذلك توجهنا في بحثنا دراسة للعلاقة بين المرضين محليا,الهدف من الدراسة هو ايجاد علاقة بين ازدياد كريات الدم الحمراء وسرعة ترسب الدهون الكلية داخل الاوعية الدموية مسببة الضغط والتجلطات.

اشتمل البحث دراسة **64** مريضا تتراوح أعمارهم من **20** - **35** يعانون من زيادة في كريات الدم الحمراء polycythaemia مشخصون سابقاً بواسطة فحص حجم كريات الدم المضغوطة (pcv) وقد أجرى لهم فحوصات الدهون الكلي lipid profile (HDL , LDL , cholesterol , Triglyceride) وأظهرت النتائج وجود علاقة بين ارتفاع مستوى تركيز الدهون بالدم وزيادة الـ PCV على حدٍ سواء , حيث كانت نسبة الزيادة للأشخاص المصابين بالـpolycythaemia وارتفاع الدهون كما يلي (cholesterol %45)(Triglyceride%58)(LDL%39)(HDL%22) .

الاستنتاج ان المريض المصاب بازدياد كريات الدم الحمراء يكون اكثر تعرضا الى ترسب الدهون على جدار الاوعية الدموية مما يكون اكثر اصابة بارتفاع ضغط الدم والتجلطات.

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Introduction:

Polycythemia is a relative or a major increase in the number of circulating RBC resulting in an increased PCV, RBC count, and hemoglobin concentration.

Relative Polycythemia:
A loss of the volume in plasma offered the will result in an apparent increase in RBC numbers. Relative polycythemia can be caused by any mechanism that results in hem concentration, such as dehydration from vomiting or diarrhea, or in a fluid shift from the intravascular to the extra vascular space due to increased vascular permeability.

Absolute Polycythemia:

A real increase in RBC numbers results from increased production. Definitive diagnoses requires direct RBC mass determination, which usually is not clinically available. Clinical diagnoses is based on a persistently increased PCV, without concurrent splenic contraction or dehydration (the latter based on lack of response to fluids). Clinical signs include red mucous membranes, often normal hydration status, bleeding tendencies, polyuria and polydipsia, seizures or behavioral changes, ataxia, weakness, amaurosis, tortuous retinal vessels , hemorrhages, and retinal detachments and blindness[1].

 " Cholesterol" the lifestyle may be depending on vary, sex or the inheritance of the individual. The healthier live can do certain things to every one of us. Those one of dilemmas contain working order "cholesterol" at the correct level. But the conformity is even adult , in real world qualified human beings elevated of" cholesterol" have, chances even though of elevated amplify certain factors due to. Can be modify lifestyle running some factors ,while the others involve more so violent approximation to contain "cholesterol-lowering" prescription. Haulage surrounding surplus weight enlargement usually level of the "bad cholesterol". Answer finding of one is to exert effort honestly with consultant of your or a dietician to estimation what the weight is for your context and stage of life perfect, then a practical plan choose to the types of that food be useful decrease your "cholesterol".

     Age goes up "Cholesterol levels" start increase inr both male and female as age depart . Normally female between the age of 50 and 55 have a lower level than men do. Still, on time a starts female into end of menstruation, Occurrence of the innately "cholesterol level is that starts" to rise . The parameters are that history performs genes a big role in many viewpoint of healthy human to contain the quantity of" cholesterol" may have to you handle something. If have you a hood that had to use violence with "high levels of cholesterol", your following an opportunity of in their track are" high". If estimation your doctor has that you have" a high level of cholesterol", some research do to end if other members have this triple and ask of your family what drug or therapies they have had success with? Further than potential , same that orderliness will be you useful. While you get together with "doctor or dietician", take your history case along with any pr oven therapies and drug for them to an assessment. [2,3]

     Early an indication of a disease of a recession of "high cholesterol usually is unusual" . Above levels of "cholesterol" is healthy consider as a scientific analysis of a sample of blood the same from. The early symptoms of a recession seen are sincerely a range the final-result of "high cholesterol" for health issues such as coronary disease, peripheral vascular and stroke, disease. Due to "high level of cholesterol" the first in sequence symptom connected with arteries , veins and heart

disease is called Angina (chest pain). When feel a person something this, they describe a feeling of "pressure", "squeezing". In addition to the reported pressure, other symptoms are nausea, shortness of breath, "sweating" , lightheadedness or "dizziness", and "heart palpitations". Angina can be directly correlated to coronary "heart disease" and seriously should be occupied. : [4]

Nevertheless, "there are other stressors such as over-exertion, high-level of emotion, or even after eating a huge meal to be considered. In these circumstances a short period of rest, five minutes or so, will reduce or eliminate the symptoms. Again, if you have any of these symptoms, it is better to be checked out by a physician than to assume everything is fine. High cholesterol is a risk factor. Doctors consider cholesterol levels of no more than 180 to be optimal". :[5]

Below average "cholesterol level, will not a guarantee a good heart health, as some people with low levels do suffer from heart attacks. Reducing the quantity of saturated fat and cholesterol in your diet helps lower your blood cholesterol level. Taking proper treatment for cholesterol is good for our health. The major purpose of cholesterol-lowering treatment is to reduce your LDL level enough to reduce your risk of developing heart disease or having a heart attack". [6]

"Triglycerides are formed from a single molecule of glycerol", Three fatty acids pooled with on each of the OH groups, and make up most of fats digested by humans. (fatty acid and the glycerol molecule ester bonds form between each them). The enzyme "pancreatic lipase" acts, hydrolyzing the bond and 'releasing' the fatty acid. In triglyceride form, lipids cannot be absorbed by the duodenum. Fatty acids, monoglycerides "one glycerol, one fatty acid" and some diglycerides are absorbed by the duodenum, once the broken down have been triglycerides). [2] [7]

"General structure of a triglyceride"

produced forma was "RCOO-CH2CH (-OOCR') CH2-OOCR", Where R", R', and R are alkyl border chains.(The three fatty acids RCOOH, R'COOH and R"COOH can be all different, all the same, or only the same two)". [7-9]

"Chain lengths of the fatty acids in naturally stirring triglycerides can be of varying lengths but 16, 18 and 20 the most common are carbons. Natural fatty acids found in plants and animals are typically composed only of even numbers of carbon atoms due to the way they are bio-synthesized from acetyl CoA. Bacteria, however, possess the ability to synthesized odd-number and branched-chain fatty acids. Consequently, ruminant animal fat contains odd numbered of fatty acids, such as 15, due to the rumen of bacteria in the action ". [10]

Extent fats naturaly include a mixture complex of singular "triglycerides"; because of this, dissolve over of temperatures a broad range ". Brown powder for making chocolate appearance is rare in that it is composed of a few "triglycerides" only,(one of which contains palmitic, oleic and stearic acids in that order). This gives rise to (a sharp melting point honestly, feeling smarmy chocolate to dissolve in the mouth). [7]

Used to be as a provider of energy. [7] [12] Fat and triglycerides can storage and synthesize by liver cells. When the fatty acids body a source of vigor requires, "the hormone glucagon signals the breakdown of the triglycerides by hormone-sensitive lipase to release free fatty acids". The brain enable make used of "fatty acids" as an vigor source ;unless converted to a ketone; the glycerol component of triglycerides can be transformed into glucose, (via gluconeogenesis, for brain source

of energy when it is broken down. broken down of fat cells may be for also that reason, if the brain's needs ever transitive the bodies). [13]

Cell membranes not freely pass through Triglycerides. "Special enzymes on the walls of blood vessels called lipoprotein lipases must break down triglycerides into fatty acids and glycerol. Fatty acids can then be taken up by cells via the fatty acid transporter" "FAT". [14]

"Role in disease"

Bloodstreams in the body of human have been linked to atherosclerosis when "high levels of triglycerides in it and by extension, the risk of heart disease and stroke". In whatever degree, "relatively negative impact of raised levels of triglycerides compared to that of LDL: HDL ratios is not known yet". The risk can be partly accounted for a strong inverse relationship between triglyceride level and HDL-cholesterol level.

Guidelines

The "American Heart Association has set guidelines for triglyceride levels": [2]

Level mg / dL	Level mmol / L	"Interpretation"
< 15 0	< 1.6 9	"Normal range, low risk"
15 0- 1 99	1. 70 - 2. 25	"Borderline high"
200 - 499	2. 26- 5. 65	"High"
> 50 0	> 5. 65	"Very high: high risk"

Very important note this information is "applicable to triglyceride levels as tested Fasting after 8 to 12 hours. The Triglyceride levels remain temporarily higher for a period of time after eating". Method:

Samples (serum) were collected from patients "polycythaemia" we conduct on the serum sample following test
1- cholesterol
2- triglyceride
3- LDL
4- HDL
Type of Kit ((RANDOX   321N)) were using in this research

Procedure cholesterol test :
1- add 1 ml from reagent one
2- Add 10 m from sample or stander. With mixing.
3- read on 510 nm
4- application the following formula :

Cholesterol concentration = $\dfrac{\text{Absorption test}}{\text{Absorption stander}}$ X stander concentration (200)

 Normal Value: 150 – 250 mg/dl

Procedure Triglyceride test :
5- **add 1 ml from reagent one**
6- **Add 10 µl from sample or stander. With mixing.**
7- **read on 510 nm**
8- **application the following formula :**

$$\text{Triglyceride concentration} = \frac{\text{Absorption test}}{\text{Absorption stander}} \; X \quad \text{stander concentration (150)}$$

Normal Value: 60 – 150 mg/dl

Procedure HDL test :

1-add 1 ml from reagent one
2-add 10 µ/ from sample or stander . With mixing.
3-add 0.2 ml from reagent two
4-read on 510 nm
5-application the following formula:

$$\text{HDL concentration} = \frac{\text{Absorption test}}{\text{Absorption stander}} \; X \quad \text{stander concentration}$$

Normal Value: 40 – 180 mg/dl

LDL = Cholesterol – (Tri. /5+HDL)

Result and Discussion : All the statistical analysis were done by using Pentium-4 computer through the SPSS program (version-10) and Excel application
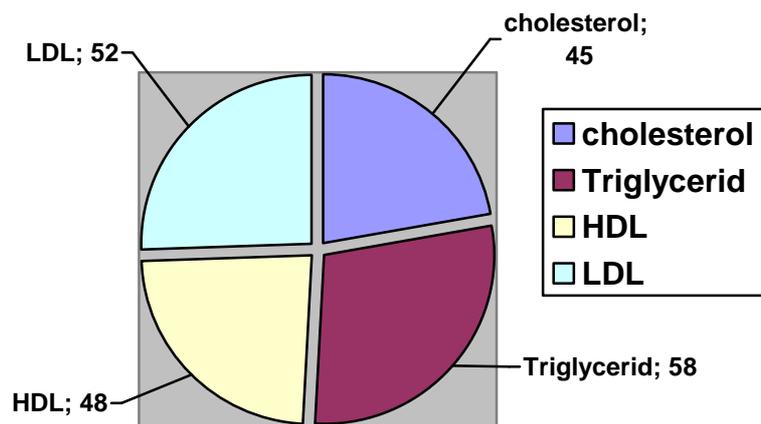
Table 1
Increase Rate of Lipid profile with polycythaemia patients

Total		Normal		Increase		Test
%	No.	%	No.	%	No.	
100	64	55	35	45	29	cholesterol
		48	27	58	37	**Triglyceride**
		52	33	48	31	**LDL**
		82	52	18	12	**HDL**
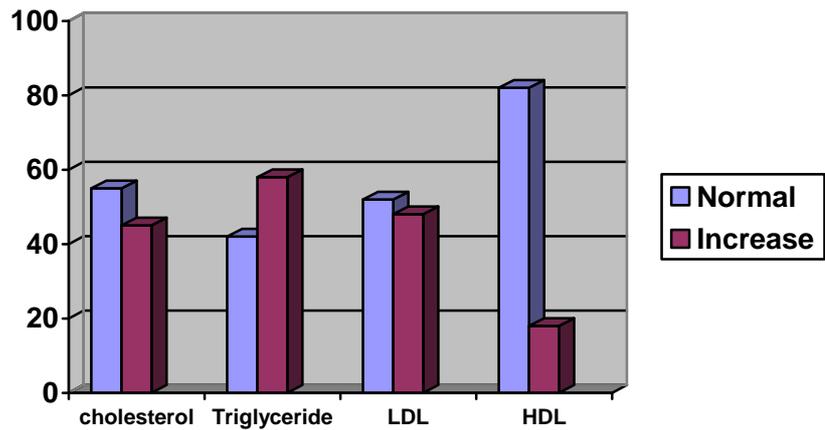
Polycythaemia patients showed Increased Rate of Lipid profile

Increase lipids in polycethemia patients

Polycythaemia one of the most important diseases caused by increased red blood cells in human bodies and we can diagnoses by pcv test, in this research appearance of results (Table 1) Total lipids increases (serum cholesterol concentration) to 45% compared to a healthy man

and appearance increase triglyceride to 58 % therefore triglyceride more the lipid types increase in Polycythaemia patients , so LDL "low density lipid" were increase to 48% while HDL "high density lipid" were few increase because of higher of LDL concentration .

Blood In Polycythaemia patients were very slow of the stream blood therefore the total cholesterol were stable without used , and the triglyceride would concentrated in blood because the tissue can not get the triglyceride due to slowing the blood stream , while HDL was most types of lipid decrease due to increase of LDL , therefore we advanced Polycythaemia patients to don't eating of saturated lipid and play of sport daily to remove the lipid and moving blood stream .

Conclusion: In Polycythaemic patient's blood stream very slow because the tissue cannot get the triglyceride due to slowing the blood stream, patients more attack the arethroma

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