LIPID SCIENCE AND LIPID DISORDERS: A REVIEW ON THE RESEARCHES SO FAR

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ABSTRACT: The history of lipid science, lipid disorders and cardiac care is fascinating and dates back to thousands of years and through this history only it has been long known that lipid abnormalities are major risk factors for coronary artery diseases. Many great scientists have illuminated the science of lipids over the years, and important discoveries have been made in the areas of organic chemistry, biochemistry, physical chemistry, technology and medicine etc. The paper does illuminates important discoveries in field of lipid science that have helped in diagnosing and better understanding of the lipid disorders and researches made in this field so far.

KEYWORDS: Lipid, lipid disorders, History

The history of lipids and lipid disorders is fascinating and dates back to thousands of years. The present information regarding important discoveries in the field of lipid science has developed over decades, which has helped in diagnosing and better understanding of the various lipid disorders.

In 1758, Cholesterol was first isolated from gall stones in its solid form by Dr. Francois Poulletier and then rediscovered in 1815 by Chevreul, who named it "cholesterine".[1,2]

In 1838, Cholesterol in human blood was detected by Louis Rene .[3]

In 1841, the earliest known association between cholesterol and atherosclerosis came out from Vogal's observation. He observed the presence of cholesterol in atherosclerotic lesions.[4]

In 1852, an Irish Physician Richard Quain noted deposition of fatty material in the blood vessels. He linked the disease with the symptoms like lethargy, improper circulation and difficulty in breathing.[1]

In 1856, Dr. Rudolf Virchow, described atherosclerosis as a disease and thought that excess cholesterol might lead to an arterial clog.[5]

In 1873, Fagge described a case of Xanthomatosis having cardiovascular symptoms.[6]

In 1878, Quinquard gave the idea that xanthoma is due to changes in blood, hypercholesteremia, and further advancement in investigations established the fact that it does concern with the disturbance of lipid metabolism.[6]

In 1908, Ignatowski observed for the first time that feeding rabbits a diet full of fat, milk, meat and eggs developed atherosclerosis of aorta.[7]

In 1910, Windaus A., determined chemically the presence of high amount of free and esterified cholesterol in fat droplets found in sclerotic arteries.[27] Windaus clarified the structure of cholesterol and along with fellow scientist Wieland got Nobel Prize for cholesterol and bile acids structure.[1]

In 1913, Nikolai Antischkow conducted an experiment on rabbits. He fed them on cholesterol rich diet and then established a link between cholesterol and atherosclerosis.[1,7,8]

In 1914, Schmidt E. recognised essential hypercholesterolemia by measuring for the very first time high serum cholesterol in patients with xanthomatosis.[3]

In 1929, Michel Macheboeuf first described the plasma lipoprotein. He isolated from horse serum a fraction of water soluble lipoprotein, what today is recognised as high-density lipoprotein.[9]

In 1934, a blood test for detection of cholesterol developed.[1]

In 1949, John Gofman and his Colleagues used ultracentrifuge to separate plasma lipoprotein by floatation and he also observed LDL association with increased risk for cardiovascular disease.[10]

In 1951, Russ, Eder and Barr with the help of some methodology identify higher levels of alpha-lipoprotein in young women compared with men.[11]

In 1950's-1960's, Dr. Ancel Keys' seven countries study helped to make a connection between fat consumption, dyslipidemia and coronary risk.[12]

In 1973, Joe Goldstein, one of the founders of modern cholesterol research genetically classified the types of cholesterol-carrying lipoproteins in the blood. He linked familial hyperlipidemia to premature heart disease.[1]

In 1977, Framingham Heart study imparted one of the first major efforts devoted to study of chronic disease. It demonstrated inverse relationship between HDL-C and one's risk of developing CHD.[13]

In 1987, Lovastatin was the first HMG-CoA reductase inhibitor introduced in world marketed by Dr. Al Alberts & Roy Vagelos, a year later, and the positive results of the primary prevention Helsinki Heart Study of gemfibrozil were announced.[14]

In 1988, the first Adult Treatment panel (ATP) developed for detection, evaluation and treatment of high blood cholesterol in adults. ATP II developed in 1993 while ATP III in 2001 which provide valuable guidelines from time to time.[15]

In 2003, Biff *et al*. reported that lipid lowering agents ameliorate renal injury as hypercholesterolemia contributes to haemodynamic form of injury by causing endothelial dysfunction.[16]

In 2008, Dr. Paul Ridker & Colleagues reported rosuvastatin lowered heart diseases risk with normal LDL-C.[1]

In 2013, Smith and Singleton, with the help of a community based cohort study of over 200 subjects, reported that obesity and dyslipidemia are potent risk factors for diabetic neuropathy.[17]

In 2013 and 2015, American Heart Association mentioned that the total cholesterol should remain less than 170 mg/dL for ideal cardiovascular health and they defined serum cholesterol level as a key factor for cardiovascular health.[18]

In 2015, Xiao Feng yang explained that Caspase-1 acts as a lipid sensor in endothelial cells, which are abundant in the inner lumen of blood vessels. In case when lipid levels reach high levels, the caspase-1 inflammasome complex initiates inflammation in the blood vessels.[19]

In 2016, ECS and EAS collectively gave the guidelines for the management of dyslipidemia.[20]
In 2017, American Association of Clinical Endocrinologists and American College Endocrinology (AACE) came up with the guidelines in an attempt to update clinicians on state-of-the-art lipid management.[21]. And looking forward to 2018 and upcoming future, we are expecting more exciting researches related in the field.

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