

Link of obesity and gallstones formation risk

Abstract

The chances of gallstones formation in humans may increase due to obesity. This risk is particularly high in those persons who have the highest body mass index. It is direly needed to check on different factors which increase weight and in turn increases the risk of gallstones formation in gallbladder. This review entails the liaison between obesity and gallstones formation risk along with the factors causing obesity and affecting gallbladder function. Different ways to control obesity and gallstones formation are also being discussed.

Keywords: obesity, gallstones, management, control

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Abbreviations: BMI, body mass index; WHO, world health organization.

Introduction

Obesity and gallbladder disease

Obesity is a health disease which may be reason to cause so many diseases and one of them is gallstone formation in gallbladder (Cholelithiasis).^{1,2} Humans with higher body mass index (BMI) are at highest risk to have gallstones in their gallbladder particularly in women.³ According to WHO overweight and obesity is considered when BMI (body mass index) is more than 30 kg/m².⁴ Obesity may cause due to high consumption of sugar, soft drinks, fatty stuffs, fast food, poor eating habits, no walk, and tired lifestyle.⁵ Gallbladder is a small organ located in the upper right part of the abdomen. The function of gallbladder is to store bile; where bile is a fluid which is produced by the liver for the breakdown of fat which further used for energy. Gallstones are generally made of cholesterol and formed when there is a disproportion between the substances producing bile. Cholesterol gallstones comprise 80% of stones in the Western world.⁶ Healthy weight management is needed to avoid gallstones formation.

Causes of gallstones formation

Cholesterol plays a tragic role in the formation of gallstone, so it is recommended to cut down on foods having high saturated fat contents like biscuits, butter, cheese and fatty cuts of meat.⁷ Diet is important factor as the intake of high energy; cholesterol, polyunsaturated fat, and fiber affect the cholesterol saturation of bile. Bile saturation may cause gallstones formation.⁸ Risk of gallstone formation may increase with increasing age.⁹ The commonness of gallstones is found to be higher in women than in men. It is supposed that the cause for this gender difference is hormonal. During pregnancy serum estrogen increases which may enhance biliary cholesterol saturation which causes increased progesterone which in turn may lead to inhibition of the contraction of the gallbladder.¹⁰ Findings also showed that diabetic patients have more gallstone formation chances than non diabetic patients.^{11,12} Poor lifestyle (smoking, alcohol, medication used, sports and walk) is also one of the main causes of gallstones formation.¹³

All the causes which play an important role in increasing obesity also enhance the risk of gallstones formation. Different factors affecting gallstones formation are given in Figure 1.



Figure 1 Factors affecting gallstones formation.

Liaison between obesity and gallstones formation

Obesity is a momentous risk factor for Cholelithiasis, especially in women. Various studies have confirmed that overweight women with BMI greater than or equal to 30 kg/m² have more chances of gallstones formation in gallbladder. Hypersecretion of cholesterol (associated with obesity) is a chief pathogenic factor. Gallstone disease has also been linked with the local distribution of fat. High central adiposity has been absolutely correlated with risk of gallstone disease. Increased dynamic and energetic physical activity and frivolous activity appear to reduce gallstone formation risk.¹⁴ Gallstone disease may also be found among those people who experience speedy weight loss by using low caloric diets. Gallstone formation may be complicated on acting upon voluntary weight loss plans. In such cases, cholesterol which is activated from adipose tissue is secreted into the bile which

leads to supersaturation of cholesterol and diminishes gallbladder contraction. Fluctuation of weight may also be a risk factor of

gallstones formation.^{15,16} The relation how obesity leads to gallstones formation is given in Figure 2.

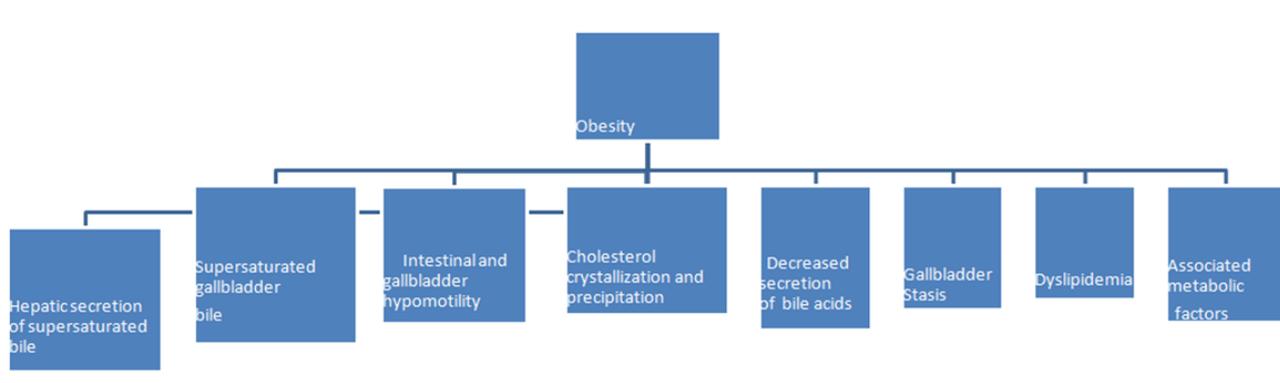


Figure 2 Effect of Obesity on Gallstones Formation.

How to control obesity and gallstones formation?

Vegetarian diet may reduce the risk of emergent gallstones. Vegetarians have an appreciably lower risk of developing gallstones as compared to people who eat meat. A diet low in fat and high in fiber may lead to lower risk of gallstone formation. Fruits and vegetables may care for people¹⁷ from developing gallstones. Control of bodyweight may also help in preventing the development of gallstones. Conversely hurtle dieting and rapid loss of weigh may increase the risk of gallstones formation; so temperance is advised. Physical activity and yoga is the most important and effective

therapy for both obesity control and hence lowering gallstones risk.¹⁸ The relationship between diet and exercise is appeared to be most easiest way to control obesity and hence different diseases including gallstones formation.¹⁹ Healthy life style may greatly affect obesity control and reduces the risk of gallstones formation.²⁰ Socialization, involvements with friends, healthy enjoyable **activities** and sports may lead to achieve a healthy lifestyle.²¹ Consulting a good physician who can treat by healthy means of natural and artistic ways may help to prevent obesity as well as gallstones formation.^{22,23} Different ways to avoid obesity and hence gallstones formation in gallbladder are given in Figure 3.



Figure 3 Ways to Reduce Obesity and Gallstones Formation.

Conclusion

It is concluded that gallstones formation in gallbladder is related to obesity. Cholesterol levels are increased at higher body fat levels which is too dangerous to contribute to gallstones

development. It is terrifically vital to treat obesity brusquely in order to control so many diseases including gallstones. Use of healthy diet having fruits and vegetables, vigorous exercises, use of water and natural drinks and health friendly lifestyle may help in obesity control as well as in lowering gallstones risk.

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Conflicts of interest

The author declares that there is no conflict of interest.

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References

- Maclure KM, Hayes KC, Colditz GA, et al. Weight, diet, and the risk of symptomatic gallstones in middle-aged women. *N Engl J Med*. 1989;321(9):563–569.
- Scragg RK, McMichael AJ, Baghurst PA. Diet, alcohol, and relative weight in gall stone disease: a case-control study. *Br Med J (Clin Res Ed)*. 1984;288(6424):1113–1119.
- Erlinger S. Gallstones in obesity and weight loss. *Eur J Gastroenterol Hepatol*. 2000;12(12):1347–1352.
- World Health Organization. Obesity: preventing and managing the global epidemic. Part I. The problem of overweight and obesity. WHO Technical Report Series No. 894. WHO: Geneva; 2000. p. 5–15.
- Wright SM, Aronne LJ. Causes of obesity. *Abdom Imaging*. 2012;37(5):730–732.
- Acalovschi M. Cholesterol gallstones: from epidemiology to prevention. *Postgrad Med J*. 2001;77(906): 221–229.
- Stampfer MJ, Maclure KM, Colditz GA, et al. Risk of symptomatic gallstones in women with severe obesity. *Am J Clin Nutr*. 1992;55(3):652–658.
- Bennion LJ, Grundy SM. Risk factors for the development of cholelithiasis in man. *N Engl J Med*. 1978;299(21):1161–1167.
- Reif S, Sloven DG, Leberthal E. Gallstones in children: Characterization by age, etiology, and outcome. *American journal of diseases of children*. 1991;145(1):105–108.
- Novacek G. Gender and gallstone disease. *Wiener Medizinische Wochenschrift*. 2006;156(19–20):527–533.
- Ikard RW. Gallstones, cholecystitis and diabetes. *Surg Gynecol Obstet*. 1990;171(6):528–532.
- Aune D, Vatten LJ. Diabetes mellitus and the risk of gallbladder disease: a systematic review and meta-analysis of prospective studies. *J Diabetes Complications*. 2016;30(2):368–373.
- Tsai MC, Huang CC, Kao LT, et al. Increased risk of peptic ulcers following a cholecystectomy for gallstones. *Scientific reports*. 2016;6:30702.
- Aune D, Norat T, Vatten LJ. Body mass index, abdominal fatness and the risk of gallbladder disease. *Eur J Epidemiol*. 2015;30(9):1009–1019.
- Erlinger S. Gallstones in obesity and weight loss. *Eur J Gastroenterol Hepatol*. 2000;12(12):1347–1352.
- Everhart JE. Contributions of obesity and weight loss to gallstone disease. *Ann Intern Med*. 1993;119(10):1029–1035.
- Tohill BC. Dietary Intake of Fruit and Vegetables and Management of Body Weight. Background paper for Joint FAO/WHO Workshop on Fruit and Vegetables for Health, Switzerland; 2014. p. 1–3.
- Banim PJ, Luben RN, Wareham NJ, et al. Physical activity reduces the risk of symptomatic gallstones: a prospective cohort study. *Eur J Gastroenterol Hepatol*. 2010;22(8):983–988.
- NNSC: National Nutrition Surveillance Centre. The Interrelationship between Obesity, Physical Activity, Nutrition and other Determinates. 2009. 3 p.
- Borch K, Jönsson KÅ, Zdolsek JM, et al. Prevalence of gallstone disease in a Swedish population sample: relations to occupation, childbirth, health status, life style, medications, and blood lipids. *Scandinavian journal of gastroenterology*. 1998;33(11):1219–1225.
- Sachdeva S, Khan Z, Ansari MA, et al. Lifestyle and gallstone disease: scope for primary prevention. *Indian J Community Med*. 2011;36(4):263–267.
- Roberts HA. The principal and art of cure by homeopathy. 1942. 9 p.
- Zhang CG, Li YT. The Application of Traditional Chinese Medicine in the Prevention and Treatment of Gallstones. *Medical Recapitulate*. 2009. 13 p.