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## Review Article

# A Review on Associated Diseases, Diagnosis, Treatment and Management of Type 2 Diabetes Mellitus

## Abstract

An incidence of diabetes is right away growing everywhere in the world at the startling rate. For the past 3 decades, the prominence of diabetes has been substantially changed, previously it's been taken into consideration as a minor illness of the aged humans. A gift, it has become the most critical cause of morbidity and mortality affecting the young and center-elderly people. Type 2 diabetes mellitus is an advanced situation wherein the frame become immune to the normal outcomes of insulin and little by little loses the capacity to produce sufficient insulin in the pancreas. It is related to regulating lifestyle with strong genetic and circle of relatives associated hazard elements. This overview is primarily based on associated illnesses like Liver elements, the stiffness of intermediate-sized arteries in patients and cardiovascular disorder. Diagnosis and treatment based totally on numerous metabolic pathways and anti-diabetic retailers, control of sickness with social obligation. There are numerous anti-diabetics pills which might be administered orally or through injection, the synergistic effect of a few tablets would be extra powerful due to the complex components in it. The treatment couldn't simply be energetic and secure, it ought to additionally enhance the satisfactory of existence.

## Introduction

Progressive insulin secretory illness on the background of insulin resistance leads to Type 2 diabetes (T2DM). The increases of patients reflecting population getting old, diabetes wishes broader involvement of non-specialist physicians while as compared to other diseases. This is a metabolic ailment which might be averted by using a change of lifestyle and right food regimen. Based on the weight problems treatment set of rules, the remedy for overweight or obesity in patients is preceded. Food is broken into simple components at some stage in digestion. Carbohydrates are broken down into typical glucose and simple sugars. Glucose is a critical supply of energy for the cells. In order to provide electricity to the cells, glucose desires to depart the blood and get inside the cells [1]. The person with type 2 diabetes produce insulin, yet their cells couldn't use it in addition to they should, this condition is called insulin resistance. Initially pancreas produces more insulin on the way to get glucose into the cells, subsequently, it could not preserve up, and the sugar builds up to your blood instead. Type 2 can be because of synthetic sweeteners consumption, obese, ingesting meals or beverages with sugar and simple carbohydrates, lack of exercising, stress hormones and genetic ailment. T2DM includes an array of dysfunctions characterized with the aid

of hyperglycemia and as a result of the combo of resistance to insulin action, inadequate insulin secretion, and an excessive amount of or inappropriate glucagon secretion. Symptoms of T2DM which encompass regions of darkened pores and skin, sluggish-recovery sores or frequent infections, blurred vision, fatigue, weight benefit, expanded hunger and elevated thirst and frequent urination [2].

## Review of Literature

### Associated disease

Liver elements are appreciably correlated with diabetes mellitus; consequently, appropriate diagnosis and management of the peculiar liver parameters could reduce liver associated infection and death in the diabetic population [1]. Plasma tiers of adiponectin boom with the severity of renal failure and also tiers of albuminuria in kidney disorder patients with type 2 diabetes [3]. It has been considered that T2DM and Alzheimer's ailment is a prime public fitness problem. It needs to be taken into account that T2DM sufferers suffer early cognitive deficits just like that of suffered by Alzheimer's patients while preventive and intervention packages designed for diabetic elders [4].

Brachial pulse wave speed became more in T2DM sufferers with albuminuria for the duration of postprandial hyperglycemia. Elevation of postprandial pulse wave velocity should act as a marker for stiffness of intermediate-sized arteries in sufferers with T2DM. There had been no changes in other components of the arterial mattress [5]. The occurrence of a persistent kidney ailment in T2DM patients in India became pushed by high proteinuria. It might be an excellent guide to pick diabetes drug for many elegances of medicine which relates kidney function [6]. T2DM is definitely connected to a fairly reduced chance of Prostate Cancer and energy of this record lies in addition of a meta-analysis with big scale devices. Numerous mechanisms behind this link are hormonal changes in T2DM sufferers, the genetic link between the risks of the 2 illnesses, and the consequences of anti-diabetic pills [7].

Most of the statistics to be had on obstructive sleep apnea and its association with diabetic peripheral neuropathy are hard to interpret. Association between Diabetic peripheral neuropathy and Obstructive sleep apnea in T2DM patients shows a tricky interrelationship [8]. The study of cardiovascular activities associated with the use of anti-diabetics has to lead to expertise the ability outcomes of medication for T2DM on cardiovascular risk. Clinical trials carried out with glucagon-like peptide-1 receptor agonists and cardiovascular final results trials have variations in design and enrolment which limits institutions among them. Semaglutide and liraglutide have higher cardiovascular benefit while in comparison to placebo, both in the presence of fashionable treatment [9].

## Diagnosis

miRNA profiles should supply consequences of the potential effect on predicting drug reaction of T2DM aged patients and helping in choosing suitable applicants to this therapy [10].

There may be a probable mechanistic association between plasma Neuregulin 4 level and metabolic syndrome in newly recognized type2 diabetes mellitus subjects. Plasma Neuregulin 4 stages would be an ability biomarker for the improvement of metabolic syndrome. Further studies are required to endorse the contribution of Neuregulin 4 to broaden metabolic syndrome [11].

Treatment with numerous metabolic pathways and anti-diabetic sellers.

When home chook turned into checked for its Fatty acid composition, it carries oleic acid and arachidonic acid in large quantity, which has useful fitness impact. And additionally, the presence of palmitoleic acid is observed in hybrid fowl. When alloxan prompted rats checked for its blood sugar degree, rats administered with home and hybrid hen oil confirmed sizeable discount of blood sugar [2].

In T2DM, actual roles of autophagy law have not been clarified. Studies have endorsed that improved autophagy induced by using insulin resistance could be a defensive tool in opposition to the dysfunction and dying of pancreatic  $\beta$ -cells. In latest days, effects of autophagy in cellular demise or mobile survival in case of diabetes are essential to the place of studies.

With no dangerous results to  $\beta$ -cells, therapeutic marketers with autophagy-enhancing activity could act as a completely unique magnificence of prescription drugs for T2DM [12].

In remedy of obese patients with T2DM, canagliflozin acts as a supplement of a weight loss intensive lifestyle mediation program that's linked with development in frame weight, glycemic manage and uric acid tiers [13].

Carvedilol in the presence or absence of oral anti-diabetic capsules would be plenty powerful and it may replace the entire dose of insulin. T2DM patients on the oral medicinal drug with excessive Hemoglobin A1c who reject insulin can reap glycemic manage if carvedilol is supplemented to their Oral Anti-Diabetic Drug. Synergistic impact of oral insulin and carvedilol might be effective as insulin that is injectable; this results in early approval of meals and drug management [14]. Hydroxychloroquine 400 mg consistent with day can be powerful supplements for an awesome glycemic manage while applicably utilized in Type 2 diabetes mellitus patients those are poorly managed on other oral marketers [15].

Distinctive obese person lengthy-lasting modern diabetic kidney ailment with a single kidney, it becomes confirmed that sodium-glucose-co-transporter-2 inhibitors all of the sudden and appreciably diminished albuminuria possibly via amelioration of glomerular hyperfiltration. This result in an evaluation of the reno-protecting role of sodium-glucose-co-transporter-2 inhibitors in individuals with glomerular-hyperfiltration which typically occurs at some point of the early phase of Diabetic kidney disorder and in the presence of well-sized susceptibility element which include weight problems [16].

Decreased Serum free triiodothyronine and lose thyroxine/ Serum free triiodothyronine ratios and improved loose thyroxine degrees were autonomously related to the superiority of T2DM most of the grown-up population. Significantly negative courting among thyroid-stimulating hormone and T2DM became observed in men but not in girls. Further studies might be centred on clarifying the reason-and-effect dating among Thyroid hormones and T2DM [17].

Liraglutide with high-dose insulin treatment in overweight patients with mounted and out of control T2DM improves glycemia specifically, through development in insulin secretion however not through suppression of glucagon secretion [18].

In a community-primarily based organization, the relationship between plasma copeptin, less insulin sensitivity and improved danger for impaired fasting glucose and diabetes. Furthermore, it outspreads allelic institutions in guys between arginine vasopressin-neurophysin II gene versions and plasma copeptin and the risk of impaired fasting glucose and diabetes [19].

Many sufferers with consistent newly diagnosed T2DM with severe hyperglycemia, oral medications like Kombiglyze XR and glipizide XL and provide an active and meek routine as an alternative to extra clumsy insulin therapy and will attain early glycemic control. Improvement in glycemic parameters

became faster and most of the sufferers attained glycemic targets inside 12 weeks. Even although medicines had been powerful in reducing BG levels, the mixture of metformin with saxagliptin seems more secure for hypoglycemia. American Diabetes Association tips which can be related to initiation therapy in patients with strong newly diagnosed T2DM with severe hyperglycemia might also encompass noninsulin options [20].

Effect of metformin on colorectal cancer survival warrants in addition demonstration by means of randomized managed trials that classify colorectal most cancers sufferers. Colorectal cancer progression and its various equivalent treatments would be taken under consideration, due to the fact those variables could additionally affect patients' survival benefit that could prejudice the effect of metformin and different diabetes medications [21].

There is a relation among fructose metabolism and sort 2 diabetes with other metabolic illnesses. Fructose should cause Type 2 diabetes, obesity, induce insulin resistance and extended high blood pressure. Foods source like juices and pastries ought to include plentiful in high fructose corn syrup must be prevented [22].

### Disease control

Type 2 diabetes self-management might assist to the degree the relationship between cultural beliefs and infection, it changed into supported through family and healthcare experts [23]. There was a correlation among the effect of Ba Duan Jin quigong exercising and development instability, body flexibility and glucose metabolism of elder adults with T2DM. The practice of Ba Duan Jin advances physical feature, the flexibility of the joints, limb power, improve glucose, lipid parameters and fortifies the nerves. These findings suggest destiny agency of community-based total workout applications of elder adults with T2DM [24].

Hypertension and T2DM are the maximum not unusual illnesses affecting the sizeable proportion of adults all over the globe. Consistent statistics approximately the occurrence of high blood pressure in a special area is necessary to increase countrywide and worldwide health rules [25]. Patients who do not opt to treatment schedule can also benefit from concentrated or synergistic treatment plans. Fasting and postprandial glucose control might allow patients to gain their targeted glycosylated hemoglobin stage and decrease their glycemic burden [26].

### Conclusion

It can be concluded that diabetes is increasing every day. The ailment is gradual killer which has no recognized curable treatment until date. Its technical hitches might be decreased via right attentiveness and suitable medicinal drugs. Major complications are kidney issues, blindness, and coronary heart assault. Additional research is required to defend the world population from this generic sickness. Type 2 DM is a metabolic ailment which could be avoided by means of a change

of existence fashion and control of overweight. Educating the overall populace continues to be sizeable to the control of this rising epidemic. Management of the ailment might be tailored to mend the quality of life of people with Type 2 DM. Dysregulation of metabolism might additionally purpose tremendous headaches in carefully all organs or tissues. Modern upgrades in animal models of T2DM ought to make it possible to discover the previously furtive pathogenesis of the sickness.

### References

1. Richard EP (2013) The early treatment of type 2 diabetes. *The American Journal of Medicine* 126: S2-S9. [Link: https://goo.gl/Di7R2f](https://goo.gl/Di7R2f)
2. Arya MS (2013) Obesity and type 2 diabetes mellitus. *Can J Diabetes* 37: 63-64.
3. Global Report on Diabetes. [Link: https://goo.gl/N6apYE](https://goo.gl/N6apYE)
4. Paisey R, Banks R, Holton R, Young K, Hopton M, et al. (1986) Glycosylated haemoglobin in uraemia. *Diabet Med* 3: 445-448. [Link: https://goo.gl/h2mg6k](https://goo.gl/h2mg6k)
5. Diaz-Buxo JA (1993) Blood glucose control in diabetics: I. *Semin Dial*. 6: 392-397.
6. Department of Health Renal Team. The National Service Framework for Renal Services. Part 2: chronic kidney disease, acute renal failure and end of life care. [Link: https://goo.gl/hm8NKV](https://goo.gl/hm8NKV)
7. Chudleigh RA, Dunseath G, Peter R, Harvey JN, Ollerton RL, et al. (2008) Influence of body weight on the performance of glomerular filtration rate estimators in subjects with type 2 diabetes. *Diabetes Care* 31: 47-49. [Link: https://goo.gl/sGfE4K](https://goo.gl/sGfE4K)
8. Levey AS, Coresh J, Greene T, Stevens LA, Zhang YL, et al. (2006) Using standardized serum creatinine values in the modification of diet in renal disease study equation for estimating glomerular filtration rate. *Ann Intern Med* 145: 247-254. [Link: https://goo.gl/nnW3un](https://goo.gl/nnW3un)
9. Rule AD, Larson TS, Bergstralh EJ, Slezak JM, Jacobsen SJ, et al. (2004) Using serum creatinine to estimate glomerular filtration rate: accuracy in good health and in chronic kidney disease. *Ann Intern Med* 141: 929-937. [Link: https://goo.gl/FFCdq9](https://goo.gl/FFCdq9)
10. Vervoort G, Willems HL, Wetzels JF. Assessment of glomerular filtration rate in healthy subjects and normoalbuminuric diabetic patients: validity of a new (MDRD) prediction equation. *Nephrol Dial Transplant* 17: 1909-1913. [Link: https://goo.gl/B1xabW](https://goo.gl/B1xabW)
11. Nielsen S, Rehling M, Schmitz A, Mogensen CE. (1999) Validity of rapid estimation of glomerular filtration rate in type 2 diabetic patients with normal renal function. *Nephrol Dial Transplant* 14: 615-619. [Link: https://goo.gl/TYisa7](https://goo.gl/TYisa7)
12. Goldstein DE, Little RR, Lorenz RA, Malone JI, Nathan D, et al. (2004) Test of glycemia in diabetes. *Diabetes Care* 27: 1761-1773. [Link: https://goo.gl/9EZw4D](https://goo.gl/9EZw4D)
13. American Diabetes Association (2007) Standard of Medical Care in Diabetes-2007. *Diabetes Care* 30: s4-s41. [Link: https://goo.gl/58iPTu](https://goo.gl/58iPTu)
14. Tzamaloukas AH, Murata GH, Zager PG, Eisenberg B, Avasthi PS (1993) The relationship between glycemic control and morbidity and mortality for diabetics on dialysis. *ASAIO J* 39: 880-885. [Link: https://goo.gl/A47pQj](https://goo.gl/A47pQj)
15. Gin H, Rigaleau V, Aparicio M (1999) Which diet for diabetic patients with chronic renal failure? *Nephrol Dial Transplant* 14: 2577-2579. [Link: https://goo.gl/jqQqyy](https://goo.gl/jqQqyy)
16. Gin H, Aparicio M, Aubertin J (1987) Low protein and low phosphorus diet in patients with chronic renal failure: influence on glucose tolerance and tissue-insulin sensitivity. *Metabolism* 36: 1080-1085. [Link: https://goo.gl/jv2gNy](https://goo.gl/jv2gNy)

17. Snyder RW, Berns JS (2004) Use of insulin and oral hypoglycemic medications in patients with diabetes mellitus and advanced kidney disease. *Semin Dial* 17: 365–370. [Link: https://goo.gl/pprbV6](https://goo.gl/pprbV6)
18. Daniels ID, Markell MS (1993) Blood glucose control in diabetics: II. *Semin Dial* 6: 394–399. [Link: https://goo.gl/pBCh9u](https://goo.gl/pBCh9u)
19. Tzamaloukas AH, Oreopoulos DG (1991) Subcutaneous versus intraperitoneal insulin in the management of diabetics on CAPD: a review. *Adv Perit Dial* 7: 81–85. [Link: https://goo.gl/cvdDqZ](https://goo.gl/cvdDqZ)
20. Bahathiq AO (2018) Childhood obesity in Makkah City. *Endocrinol Diabetes Res* 4:1. [Link: https://goo.gl/Hn4KJm](https://goo.gl/Hn4KJm)
21. Levey AS, Bosch JP, Lewis JB, Greene T, Rogers N, et al. (1999) A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. Modification of Diet in Renal Disease Study Group. *Ann Intern Med* 130: 461–470. [Link: https://goo.gl/7pLtjY](https://goo.gl/7pLtjY)
22. Du Bois D, Du Bois EF (1989) A formula to estimate the approximate surface area if height and weight be known. 1916. *Nutrition* 5: 303–311. [Link: https://goo.gl/xMQpjk](https://goo.gl/xMQpjk)
23. Joy MS, Cefalu WT, Hogan SL, Nachman PH (2002) Long-term glycemic control measurements in diabetic patients receiving hemodialysis. *Am J Kidney Dis* 39: 297–307. [Link: https://goo.gl/EKQHcp](https://goo.gl/EKQHcp)
24. Gin H, Rigalleau V, Aparicio M (1999) Which diet for diabetic patients with chronic renal failure? *Nephrol Dial Transplant* 14: 2577–2579. [Link: https://goo.gl/NWW1i9](https://goo.gl/NWW1i9)
25. Cockcroft DW, Gault MH (1976) Prediction of creatinine clearance from serum creatinine. *Nephron* 16: 31–41. [Link: https://goo.gl/4tZzri](https://goo.gl/4tZzri)
26. Tzamaloukas AH (1998) The use of glycosylated hemoglobin in dialysis patients. *Semin Dial* 11: 143–147. [Link: https://goo.gl/gn1iHW](https://goo.gl/gn1iHW)
27. Randers E, Kristensen JH, Erlandsen EJ, Danielsen H (1998) Serum Cystatin-C as a marker of the renal function. *Scand J Clin Lab Invest* 58: 585–592. [Link: https://goo.gl/G449su](https://goo.gl/G449su)
28. Premaratne E, MacIsaac RJ, Finch S, Panagiotopoulos S, Ekinci E, et al. (2008) Serial measurements of Cystatin-C are more accurate than creatinine-based methods in detecting declining renal function in type 1 diabetes. *Diabetes Care* 31: 971–973. [Link: https://goo.gl/9uwteH](https://goo.gl/9uwteH)