Indian Academy of Pediatrics (IAP)

nRICH

Newer **R**esearch and recommendations **I**n **C**hild **H**ealth

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UNDER THE AUSPICES OF THE IAP ACTION PLAN 2023

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Dear fellow IAPans,

nRICH

Newer **R**esearch and recommendations **I**n **C**hild **H**ealth-aims to bring you the abstracts of some of the breakthrough developments in pediatrics, carefully selected from reputed journals published worldwide.

Expert commentaries will evaluate the importance and relevance of the article and discuss its application in Indian settings. nRICH will cover all the different subspecialities of pediatrics from neonatology, gastroenterology, hematology, adolescent medicine, allergy and immunology, to urology, neurology,vaccinology etc. Each issue will begin with a concise abstract and will represent the main points and ideas found in the originals. It will then be followed by the thoughtful and erudite commentary of Indian experts from various subspecialties who will give an insight on way to read and analyze these articles.

I'm sure students, practitioners and all those interested in knowing about the latest research and recommendations in child health will be immensely benefitted by this endeavor which will be published online on every Monday.

Happy reading!

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Long-Term Complications in Youth-Onset Type 2 Diabetes

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BASED ON ARTICLE

Based on article- TODAY Study Group. Long-term complications in youth-onset type 2 diabetes. New England Journal of Medicine. 2021 Jul 29;385(5):416-26.

SUMMARY

Background: Type 2 diabetes prevalence is increasing and more so in adolescents & young individuals. However, we probably need more insight regarding the complications in them as they will be transitioned to adulthood.

Method: This is a follow-up study of a multicenter clinical trial TODAY (Treatment Options for Type 2 Diabetes in Adolescents and Youth) trial. TODAY trial was conducted in the year 2004-2011 to evaluate the effects of one of three treatments (metformin, metformin plus rosiglitazone, or metformin plus an intensive lifestyle intervention) on the time to loss of glycemic control in participants who had onset of type 2 diabetes in youth. After completion of the trial, participants were transitioned to metformin with or without insulin and were enrolled in an observational follow-up study (performed from 2011 to 2020), which was conducted in two phases. The results are published in this research paper. Annual assessments of diabetic kidney disease, hypertension, dyslipidemia, and nerve issues. Retinal assessments were done twice a year.

Results: By the end of January 2020 the mean age of 500 participants was 26.4±2.8yrs & the mean duration of diabetes since the diagnosis was 13.3±1.8yrs. The cumulative incidence of hypertension was 67.5%, the incidence of dyslipidemia was 51.6%, the incidence of diabetic kidney disease was 54.8%, and the incidence of nerve disease was 32.4%. The prevalence of retinal disease was 13.7% in the period from 2010 to 2011 and 51.0% in the period from 2017 to 2018. At least one complication was observed in 60.1% of participants & two complications in 28.4%. Minority race or ethnic group, hyperglycemia, dyslipidemia, and hypertension were the risk factors for the development of complications.

Conclusions: The risk of complications, including microvascular complications, increased steadily over time and affected most participants by the time of young adulthood.

COMMENTARY

With the increasing prevalence of pediatric and adolescent obesity, type 2 diabetes has been increasing in India (1). The risk of insulin resistance and type 2 diabetes is much higher in Indians due to genetic propensity for insulin resistance and high incidence of small for gestational age (SGA) babies. There is a misconception amongst clinicians that type 2 diabetes in adolescents is a relatively less severe disease as compared to type 1 diabetes and does not lead to complications. Type 2 DM is also prone to early micro and macrovascular complications just like Type 1 diabetes in adolescents. This study indicates that diabetes-related complications appear early in youth-onset type 2 diabetes and accumulate rapidly; at least one microvascular complication developed in 60.1% of participants in the study; 28.4% of the participants having two or more diabetes complications at a mean age of 26.4 years (the meantime since the diagnosis of diabetes was 13.3 years).

Also, with the increase in the duration of diabetes, the HbA1c was worsening (at the start almost all individuals in the cohort had HbA1c of <8%. However, by 15 yrs of follow-up only 40% had HbA1c <8%). There were also 17 serious cardiovascular events including myocardial infarction, stroke, coronary artery disease, and congestive heart failure. There were six deaths reported too. Similar findings with an increased prevalence of microvascular complications among patients with Type 2 diabetes in adolescents were reported from South India (2). In the United Kingdom Prospective Diabetes Study has shown a prevalence of 25% of microvascular complications after 10 yrs of Type 2 diabetes duration (3).

When it comes to the management of type 2 diabetes in adolescents, only a few medications are approved including metformin, insulin, and GLP-1 analog (liraglutide). Experience with bariatric surgery in adolescents & young adults is limited (4). This study highlights the fact that type 2 diabetes in adolescents, a potentially preventable disease by obesity prevention, can lead to devastating crippling morbidity and even mortality at a young age due to micro and macro vascular complications and hence should not be taken lightly.

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