Review
Of
Literature
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Population based studies designed to estimate the prevalence of diabetes have generally found that one third to one half of all diabetes is undiagnosed. The duration of this preclinical stage has been estimated by extrapolation from the prevalence of complications at the time of clinical diagnosis.

Various studies have been done that show that the prevalence of complications in newly diagnosed patients are anything between 10-50%.

One of the largest studies conducted in diabetes- the United Kingdom Prospective Diabetes Study (UKPDS) showed that nearly 50% of newly diagnosed type 2 subjects already had signs of diabetic tissue damage.

- 39% had hypertension
- 31% had microaneurysms
- 18% had retinopathy
- 18% had microalbuminuria
- 13% had absent ankle reflexes

Apart from this major study various other studies have also shown the prevalence of complications at the time of diagnosis.
Brookmeyer et al\textsuperscript{3} in 1986 demonstrated the prevalence of complications in newly diagnosed patients as 2-39\% had retinopathy, 8-16\% had nephropathy, 5-12\% had neuropathy & about 8\% had cardiovascular disease.

Fernando et al\textsuperscript{10} studied the complications in 597 newly diagnosed patients in 1998 in Sri Lanka & showed the following results- nephropathy was present in 29\% of patients, neuropathy in 25\%, coronary artery disease in 21\%, retinopathy in 15\%, hypertension in 23\%, stroke in 5.6\%, peripheral vascular disease in 9.8\%, obesity in 16\%, hypercholesteremia in 11\% & hypertriglyceridemia in 14\%.

Tzeng et al\textsuperscript{11} in 2001 showed in a study in Taiwan that 25\% of newly diagnosed subjects of type 2 diabetes had retinopathy, 18\% had nephropathy & 22\% had hypertension.

A study carried out in the Dept. of Medicine, Central Middle Sex Hospital in London in 2001 revealed that the prevalence of complications were common in newly diagnosed type 2 patients with a quarter of all patients having evidence of at least one complication. The prevalence of microvascular disease was 27\% and that of macrovascular disease was 15\%. Prevalence of retinopathy was 17.5\% while the prevalence of nephropathy was 18.1\% at the time of diagnosis.
Shin et al\textsuperscript{12} in 2001 studied 148 newly diagnosed patients and concluded that 18.2\% patients had nephropathy as assessed by urine albumin excretion rate, 25.5\% had retinopathy assessed by fundoscopy & flourescent angiography. Blood pressure was found to be higher in patients with overt proteinuria.

Chowdhary et al\textsuperscript{13} in 2002 studied 292 patients with newly diagnosed type 2 diabetes who were less than 40 years of age. Results showed a prevalence of 15.7\% of macrovascular disease and 27.3\% for microvascular disease. Retinopathy was found in 17.5\% patients while nephropathy was found in 18.1\% patients. These complications were found to be higher in South Asians in comparison to Europeans.

Krahulec B et al\textsuperscript{14} in Nov 2002 studied 3424 newly diagnosed patients. Their results showed that hypercholesterimia was present in 67\% patients, hypertriglyceridemia in 66.5\% patients. Hypertension was seen in 67.9\% patients, Microalbuminuria was seen in 20.5\% patients while 22.8\% had IHD.

Spijkerman et al\textsuperscript{15} in Sep 2003 studied newly diagnosed patients and found that prevalence of retinopathy was 1.9\%, impaired foot sensitivity was 48\%, microalbuminuria was 17.2\%.

The hypertension in diabetes study HDS-1 conducted in 1993\textsuperscript{16} concluded that 39\% of newly diagnosed type 2 patients had hypertension. These patients had a great mean body mass index
(BMI) than normotensive patients. Such patients also showed a higher prevalence of cardiovascular events and also of microalbuminuria.

Pyrola et al\textsuperscript{17} reported the prevalence of hypertension to be increased by 1.6 fold in newly diagnosed patients. The prevalence of coronary artery disease was found to be increased by 1.7 fold in males and 4.4 fold in females as compared with non diabetic subjects. Prevalence of proteinuria was 19.5%.

Nambuya et al\textsuperscript{18} in 1996 studied 252 patients in Uganda and found the peripheral neuropathy was present in 46% of patients, hypertension in 27.3%, impotence in 22%, proteinuria in 17%, ischemic heart disease in 4.8%, foot ulcers in 4.0% and cataract in 3% patients.

Rugomez A et al\textsuperscript{19} studied 1077 newly diagnosed patients and found that 360 patients (33.4%) already had one or more of the various complications.

Anderson AH et al\textsuperscript{20} studied 1251 newly diagnosed patients and found the prevalence of retinopathy to be 5%. An intriguing finding was an inverse relationship between fasting triglycerides & retinopathy.

Talu S et al\textsuperscript{21} studied 487 newly diagnosed patients and found 70 of them (14.3%) to be having retinopathy. Among these back
ground retinopathy was the leading manifestation followed by macular edema, proliferative retinopathy & pre proliferative retinopathy.

Ratzmann et al\textsuperscript{22} in 1991 studied 95 newly diagnosed patients and found 6.3\% of patients to be having peripheral neuropathy while 2.1-7.3\% patients had cardiovascular autonomic neuropathy.

Klein R et al\textsuperscript{23} showed the prevalence of retinopathy to be 10.2\% in a recent cross sectional study. They concluded that this is likely to be due to a long history of undiagnosed diabetes during which retinopathy develops.

Ballard et al\textsuperscript{24} showed that nephropathy is often present early in the course of disease with upto 8\% of newly diagnosed patients having proteinuria.

Migdalis \& co-workers\textsuperscript{25} found that the prevalence of peripheral vascular disease in newly diagnosed type 2 patients is 6.6\%. They also found that patients with PVD had low HDL-C levels \& high triglyceride levels.

Liu D P et al\textsuperscript{26} studied 773 newly diagnosed patients and found that nearly 21\% already had retinopathy at the time of diagnosis.
McDowell and co-workers\textsuperscript{27} found that diabetic foot was present in nearly 20\% of newly diagnosed patients and they had to undergo lower extremity amputation within one year of diagnosis.

Joglekar & co-workers\textsuperscript{28} studied the lipid profile in newly diagnosed type 2 patients with regard to levels of cholestrol, triglyceride and non esterified fatty acid (NEFA). They concluded that triglyceride and NEFA were raised significantly in newly diagnosed patients while cholestrol was not in comparison to controls.

McDaid et al\textsuperscript{29} studied 41 newly diagnosed patients and found that peripheral autonomic nephropathy was present in significant number of patients.

Talu et al\textsuperscript{30} studied retinopathy in newly diagnosed patients and found 11.7\% patients had background retinopathy, 1.4\% had clinically significant vascular edema & 1.02\% had proliferative retinopathy.

Unuigbe et al\textsuperscript{31} studied 66 newly diagnosed patients and found microalbuminuria in 50\% of them. They also found retinopathy in 23\% of patients.

Frost D et al\textsuperscript{32} studied intimal medial thickness (IMT) in carotid arteries and found that subclinical atherosclerosis was present in sizeable number of patients.
Kumar Rakesh\textsuperscript{33} et al studied the prevalence of complications in newly detected patients and reported 47.3\% patients having neuropathy, 34.4\% had microalbuminuria, 28\% having retinopathy, 14\% had coronary artery disease & 11\% had peripheral vascular disease.

McKuige et al\textsuperscript{34} in a study in England showed that truncal skinfold thickness in south asian men were significantly greater despite similar skinfold thickness on the limbs at a comparable BMI.

Banerji et al\textsuperscript{35} while studying obesity in migrant Indians in USA found that the exaggerated risk of insulin resistance in Indians is very likely due to an excess total body fat in comparision to caucasions.

Patel et al\textsuperscript{36} studied infections in diabetes and found that skin and soft tissue infections may be the first manifestation of the disease.

Howard et al\textsuperscript{37} in the strong heart study found that dyslipidemia in women tends to be more severe than in men.