NON-COMPLIANCE WITH THE USE OF INSULIN AMONGST INSULIN REQUIRING DIABETICS: CAUSES AND ITS POSSIBLE SOLUTIONS

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INTRODUCTION

Diabetes Mellitus is increasingly being recognized as a major public health problem all over the world. In 1997 an estimated 124 million people world wide had diabetes [1]. By year 2010 the total number of people with diabetes world over is projected to reach 221 million [1]. The regions with the greatest potential increases are Asia and Africa, where diabetes rates could rise to 2 to 3 times those experienced today[2].

The discovery of insulin in the 20th century by Banting ,Best, Macleod and Collip revolutionized the treatment of diabetes [3].The clinical course and prognosis of people with diabetes is influenced predominantly by duration and degree of metabolic control [4].Although our understanding of diabetes has increased over the time, complications remain a problem. Lack of insulin has many times resulted in a patient suffering from diabetic ketoacidosis and clinicians and patients usually mention lack of insulin as a common impediment to management. This article discusses the possible reasons why insulin is lacking and suggests some possible solutions to the problem.

DIABETES MANAGEMENT

The management of diabetes involves drug therapy, lifestyle and diet modifications and health education.Recently there has been great interest in prevention of diabetes and two recently concluded trials have stimulated the enthusiasm for the prevention of diabetes.Life style interventions reduced the incidence of diabetes by over 50% in the Finnish Diabetes Prevention Study (DPS)[5] and Diabetes Prevention Programme (DPP)[6]. The management of type 1 and type 2 diabetes mellitus has improved because of tremendous improvement in insulins over the years. The severity and incidence of complications can be reduced or delayed if glycaemic control is optimal. Data from diabetic control and complications trial (DCCT)[7] showed reduction in severity and occurrence of microvascular complications in IDDM. Similar data emerged for NIDDM patients,showing the importance of tight control and its relationship with delaying the onset and slowing the progression of microvascular and macrovascular complica-

tions [8, 9].The role of insulin in ensuring the proper control of type1 diabetes is of course vital.

INSULIN SHORTAGE

Why do we have insulin shortages in the developing world? Poverty is prevalent in these nations, health budgets in general and drug expenditure in particular are below the minimum requirements. The problem is compounded by the fact that such countries are drug consumers and not the producers and imported products are generally expensive.The scarcity of insulin may therefore not be specific , but rather reflect general drug shortages which include antibiotics, antihypertensives and other essential drugs as well as insulin.The developing countries have 84% of the worlds population and about 65% of its diabetic patients , yet they use only 30% of worlds total insulin each year.This is in sharp contrast with industrialized countries,which have 35% of worlds population but currently use about 70% of the worlds total insulin each year [10] .While its true that developing countries are poor ,it is also true that in some if not many situations governments are spending public money for 'non-essential' services. Also it is very important to have peace and calm in the country as wars or war like situations are expensive ventures which applies particularly to nations like our own .It distract people from pursuing development activities. While it is the desire of every nation to preserve its sovereignty, wars are expensive and drain resources .Availability of insulin may partially depend indirectly on peace and stability in the country. It is unfortunate but well known observation that drugs are stolen from public hospitals, leading to further shortages in these institutions. Sometimes drugs are withheld in the pharmacy stores reserved for 'serious in patients' only or sometimes insulin is refused even to inpatients because of shorages of funds allocated to the institutions for purchase of

drugs.This is a daily occurrence in our in and out patients , where patients stop insulin on their own primarily because of poverty but also due to wrong beliefs viz. insulin is addictive or damages organs or it's last stage of the disease despite repeatedly educating them regarding benefits of insulin and long term cost effectiveness if complications can be minimized with better glyceamic control .Review of inpatient record of six months at endocrinology department PGMI/HMC where author works showed that out of 255 patients 137(53.7%) patients required insulin(unpublished data). Of these 137 patients 94(68.6%) patients were on oral hypoglycaemics and were switched to insulin while 43(31.4%) patients were on insulin prior to admission but stopped insulin due to lack of availability. Non availability of insulin in far flung areas leads to stoppage of insulin injections and this problem is further augumented if there is no proper cold storage facility at pharmacy in these areas or even at patients home.

SUGGESTED SOLUTIONS

Health education about diabetes management must not only be targeted towards patients and their immediate family members but every one especially policy makers and other opinion leaders need to be sensitized to diabetes repeatedly. Government may need to consider to decrease taxes or even waiver taxes on this life saving therapy. This, it is hoped will promote adequate or improved allocation of resources towards insulin expenditure. Multinational drug companies need to bring down prices of newer insulins and can form a pool for the developing countries from which insulin can be provided to these countries. Also if technology is transferred to these countries and these newer insulins are manufactured by national drug companies its price will be much less and it may be affordable to poorer patients. Better drug management practices have the potential to help the insulin

problem .Improvements can also come by training staff, proper management and improvements in accountability .Developing countries also need to look into their priority settings by minimizing 'non-essential' expenditure. We have live examples of expensive ventures like kidney disease institutes and cancer institutes running on donations and zakat money. Perhaps some zakat money from government and philanthropist needed to be directed towards free supply of insulin to poor diabetic patients on regular basis. Present system of having insulin on zakat basis is cumbersome and tedious .It is very important to make it patient friendly.

It will be interesting to note the work load of ophthalmology, nephrology, orthopaedics, cardiology departments and the expenses incurred on the diabetic patients and government. No doubt work load and the cost of these departments can be reduced by preventing devastating complications of diabetes with uninterrupted supply of insulin to insulin requiring diabetics and will be cost effective itself . There is an urgent need to look in detail at the causes of insulin shortages. Further studies will have to address some of the points raised in this article. Poor countries cannot possibly give free health services to all . If user pay for the services albeit in part , there is a likelihood that insulin availability to most of the patients may continue.

FUTURE PROSPECTS

Intensive insulin therapy is the cornerstone of glycaemic control in diabetic patients, reducing complications in type 1 and type 2 diabetic subjects[11]. Despite improvements in regimens, inconvenient multiple injections can pose a barrier to good glycaemic control. Alternative route for the administration have been determined, with inhaled insulin emerging as a viable alternative[12,13].Advances in aerosol technology have resulted in the efficient delivery of

small sized particles. The clinical performance, reproducibility and patient satisfaction with these emerging systems are currently being investigated [14-16] based on the insulin profiles seen using this route of administration, which resemble profiles of rapid acting analogs[17]. What is important for us to see that whether these new insulins would in any way give relief to our patients.

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