Symposium :

MONITORING CONTROL OF DIABETES

Ahuja, M. M. S.*

The goal for monitoring a diabetic for blood glucose is to bring it under a tight control at all times.

This concept arises from the experience that meticulous control of blood glucose can prevent or delay the vascular disease in diabetics and again that present methodology of often judging control of diabetes by urine test, a single blood glucose test or even at a different pre or post prandial periods of the day is most inadequate.

The objective of tight control of blood glucose should ideally apply to all diabetics. There are however select groups wherein it is most definitely required.

These would include :

a) IDDM in pregnancy
b) IDDM (Unstable) in young adults
c) Diabetics with abnormal renal threshold
d) Diabetics with impending or early micro-angiopathy
e) Diabetics on insulin pump or on intensive multiple injection therapy.

Methods - that are available for this purpose include :

a)   Test strips :
      Urine : Clinitest or tes-tape
      Clinitest can give false negative; tes-tape is sensitive but has poor discrimination for values above 2 %.
      Blood : Chemstrip and Visidex.
      Capillary blood-comparison of colour on visual interpretation is made and value of blood glucose is assessed.

b)   Test meters :
      Glucometer, Glucocheck.
      Use of a reflectance meter provides a readable number and the reading is available instaneously in 60 seconds.
      These methods are convenient and as well provide patient's own involvement in bringing better control of blood glucose. Errors up to 20% can occur in individual instances.
      Biochemical methods for assessment of effectiveness and metabolic control in diabetes are tabulated as follows : (The table also includes comments as to time situation and utility of each test measure).

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* All India Institute of Medical Sciences, New Delhi - 110 029.

Table

Sample	Test	Timing
Urine glucose	Benedict's Clinitest	Early morning or pre-meal, double voided 24 hour collection.
Urinary Ketones	Rothera's Test Ketostix	Any diabetic with nausea, vomiting, drowsiness, dehydration. Diabetics with labile control.
Blood glucose capillary, venous (Whole blood, Plasma)	O-Toluidine, glucose oxidase/chemstrip, visidex	**Clinic** Random, Fasting, Timed post prandial **Hospital** Profile for the day (7 sarnples) **Home** Home glucose monitoring (Preinsulin injection)
Glycosylated Hemoglobin (Integrated value of glucose for past 3 months)	Column method, calorimetric method	Once in three months Retrospective control, misses hypoglycaemia.
Blood lipid	Cholestrol Triglyceride, HDLC	Once in 3 months Rise heralds vascular event.
Blood urea/creatinine	Renal status	Rise warrants assessment of renal status.

The gains that have accrued from tight control of blood glucose in diabetics include following :

There is normalization of counter insulin hormones eg. growth hormone, catecholamines, glucagon and somatomedine.

Blood flow is improved and ankle arm index is reduced. There is deerease in retinal vessel permeability. A decrease in thickening of basement membrane. Platelet function improves. Nerve conduction velocity and latency are normalized.

It should be realized that recording of repeated blood glucose is not synonymous with good control. Again if instrumentation and recording are not carried on properly, the reliability of results can be doubtful. The mere assessment of glucose homeostasis should not be taken as indicative of biological characteristics, a holistic out look would provide better appreciation of the disease status in a diabetic: Cost effeetiveness probably limits scope of frequent monitoring in instances of IDDM under adverse situation as indicated vide supra.