TOWARDS LESSER PAIN DURING BLOOD GLUCOSE ESTIMATION

Ashish Bhalla*, Ram Singh, Atul Sachdev**, S.S.Lehl****

ABSTRACT

Blood glucose estimation is the most commonly performed procedure in clinical practice. Traditionally a digit is used for drawing blood for testing, which is easily accessible and rich in blood supply. The digits are however very sensitive, resulting in considerable discomfort and pain, especially in patients who are sensitive. The aim of our study was to compare the pain produced by lancet prick over lateral aspect of the digit, with the earlobe and to study the failure rate of each of these procedures. We conducted this study at the emergency department of Government Medical College and Hospital, Chandigarh. Over a period of two weeks, 25 alert, adult patients were included. The lateral aspect of the ring finger was used to collect the first sample and the earlobe was used for the second sample. Mean pain score, on visual analogue scale, was 2.5 mm in the earlobe group and 10 mm in the digit group. Failures to draw blood in the first attempt were more common in the earlobe prick group. We found that the pain experienced by patients in the earlobe prick group was significantly lower than that in the digit group, but more failures were also associated with it.

KEY WORDS : Blood glucose estimation; Fingerstix versus Earlobe; Pain score.

INTRODUCTION

Blood glucose estimation is the most commonly performed procedure in clinical practice, especially in the emergency setting. The conventional method of estimating blood glucose requires collection of blood from the veins followed by biochemical analysis. This method is associated with delay in reporting, and thus becomes impractical in situations, where prompt results are needed. Also conventional methods of blood glucose estimation require expertise in drawing blood, rendering it impractical for routine screening by patients, at home. With the advent of glucometers, and their acceptance as a monitoring device, blood glucose estimation and monitoring has become easier for a diabetic patient. Traditionally a digit is used for drawing blood for testing, which is easily accessible and is rich in blood supply. The digits are however, very sensitive, resulting in considerable discomfort and pain, especially in patients who are hyper sensitive (1). A quest for finding newer and less painful sites resulted in a study by Loveland and colleagues, which showed that the lateral side of the thumb was less painful, than blood drawn from the digits or by venepuncture at the elbow (2).

Simon D Carley and colleagues, studied 60 patients and compared digits with earlobe as sites for puncture. They suggested earlobe as an alternative site, as it was both accessible and vascular. They found that the earlobe puncture was less painful than the digit (1).

The aim of our study was to compare the pain produced by lancet prick over the lateral aspect of the digit, with the earlobe, and to study the failure rate of each of these procedures.

MATERIAL AND METHODS

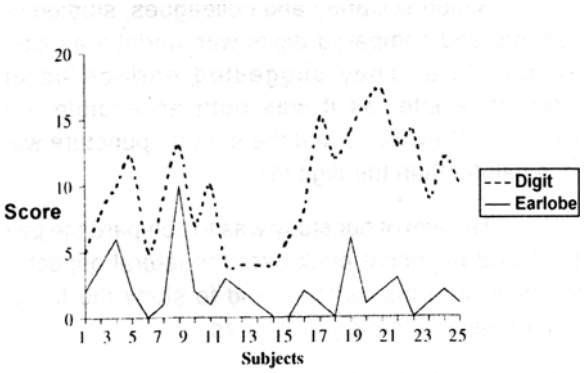
We condudcted this study at the emergency department of Government Medical College and Hospital, Chandigarh. Over a period of two weeks, 25 alert, adult patients were included in this study. Patients with bleeding disorders, altered sensorium and unconsciousness, were excluded from the study group. Patients with local lesions at any of the sites mentioned above, were also excluded. The procedure was explained to these patients and their consent was obtained before performing the test. The area over the site was cleaned with a spirit swab and a lancet prick was given, using the standard equipment. The lateral aspect of the ring finger was used to collect the first (fasting) sample and the earlobe was used for the second sample (post meal). A drop of blood was expressed for analysis of blood glucose by a glucometer. The pain response was recorded over a 100mm visual analogue scale (3). The number of successful first attempts was also noted. The data was analyzed by using SPSS statistical package.

** Senior Lecturer, ** Reader. Department of Medicine GMC and Hospital, Chandigarh*

RESULTS

A total of 25 patients were studied. Each one acted as a patient, as well as the control. Out of them, 60% were male and the remainders were females. Mean age was 38±16 years. Mean pain score was 2.5 mm in the earlobe group compared to 10mm in the digit group (Figure1). Failure to draw blood in the first attempt was also noted. In the digit prick group, there were no failures, however, in the ear lobe prick group there were six failures. However, in all but one patient, second prick was successful. More failures were noted in female patients (5/6) and no other adverse events were observed.

Fig 1 : Pain Score : Earlobe versus Digit prick



DISCUSSION

Lancet prick was found to be less painful in the earlobe than the thumb prick, in a recently published study (1). However, there were certain drawbacks of this study. Separate group of patients were considered for study of different methods of blood drawn for testing. Pain is a subjective phenomenon and pain sensitivity differs from person to person and even in the same individual at different times, under different set of circumstances (4). So it is difficult to compare pain produced by earlobe prick in one patient, to the pain produced by digit prick, in an another patient. We compared pain produced at different sites by the lancet prick, in the same individual, to exclude this. We did find that the pain experienced by patients in the earlobe prick group was significantly lower than that in the digit group. Our results are consistent with those reported earlier (1). We also experienced that the earlobe prick failed more often than the digit prick for drawing blood, especially in women. This was also the experience of the authors of the earlier study (1). This could be attributed to the tradition of getting ears pricked for wearing earrings. However, this study is too small to comment on the exact reason for this failure. Another draw back of this study is that we have not tested the feasibility of repeated testing by using earlobe prick and its utility for self monitoring of blood glucose. Larger studies are needed to address these problems.

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