Technical method

Automated method of nitrite estimation in gastric juice

PCH WATT, JOAN D DONALDSON From the Department of Surgery, Queen's University of Belfast

Gastric juice was collected from 85 subjects as described elsewhere (p 511).

The pH of samples was measured using a Corning pH meter model 113. Samples were centrifuged at 3000 rpm at 4°C for 15 min after being saturated with borax, and the supernatant was stored at −20°C (to prevent nitrite breakdown at low pH) until sufficient was available for the autoanalyser. Approximately 1 ml samples were required.

Results

The assay was linear for standard solutions of nitrite (of concentration 7-14 μmol/l–108·7 μmol/l) made up in gastric juice using the peak height produced by the autoanalyser (coefficient of correlation between nitrite concentration and peak height = 0·99) (Fig.). The coefficient of variation ranged from 5-4% (for 14 samples at 5·44 μmol/l) to 0-8% (for 11 samples at 108·7 μmol/l). When gastric juice was spiked with nitrite, sufficient to raise the nitrite concentration by 37·42 μmol/l, the mean percentage recovery was 97%. Saturating gastric juice at pH 7·35 with bilirubin (Sigma) had no detectable effect on the assay.

The mean nitrite concentration and pH were calculated for each patient. The coefficient of correlation for all 85 subjects between pH and nitrite, using the mean values in each patient, was 0·76 (Spearman’s Rank test) (p < 0·01).

Discussion

The results indicate that the Chemlab cartridge in conjunction with an autoanalyser is a suitable method for the analysis of nitrite in human gastric juice. The

Graph to show linearity of assay for solutions of sodium nitrite of known concentrations made up in gastric juice. (Standard errors of the mean ranged from 0·0 to 0·09 and were too small to be discernible on the graph.)
Letters to the Editor

Effect of an evacuated blood collection system on coagulation screening tests

An evacuated blood collection system for routine blood sampling is now being introduced into many British hospitals as a labour and cost saving technique. The use of these evacuated tubes for coagulation studies, however, has been severely criticised and even condemned. In most cases it is not convenient or desirable for a hospital to have to maintain a second routine blood taking method just for coagulation investigations. We have therefore compared samples drawn with venous cannula and syringe with those obtained by an evacuated tube technique.

Blood specimens were collected from 30 apparently healthy adult volunteers and from 19 patients regularly attending an anticoagulant clinic, who were selected at random. Venous blood was obtained by clean venepuncture with a 21 G butterfly needle (Argyle; St Louis, USA) and a disposable polystyrene syringe. Nine volumes of blood were added to one volume of 0-105 M trisodium citrate in a polystyrene plastic tube (Brunswick; Sherwood Medical, Co Antrim, N Ireland). Blood was also drawn through the same 21 G butterfly by means of a multiple sample luer adapter into a sterile siliconised evacuated tube (Vacutainer; Becton Dickinson, London) containing 0-105 M buffered sodium citrate. The present study was performed with one batch of Vacutainer tubes, no 676624, lot no J E 114, before their expiry date. The blood was immediately centrifuged at 2000 g for 15 min and the platelet poor plasma was tested within 60 min of venesection. Both types of tubes remained stoppered until tested. The thrombin and prothrombin times (using the Manchester comparative reagent) and the activated partial thromboplastin time (APTt) with kaolin were measured in duplicate on each sample by standard manual techniques. The differences between the results of the three tests performed on plasma obtained by the two sampling techniques in the normal and anticoagulant groups are shown in the Table.

The evacuated tubes gave an acceptable correlation with the plastic tubes for the prothrombin time and thrombin time in both the normal and anticoagulant groups; but there was a significantly longer APTt with the evacuated samples in both groups (p < 0-001). The lengthening of the APTt ranged up to 4 s in the normal group and 7 s in the anticoagulant group. This was sufficient to make six of the 30 normal volunteers' APTTs abnormal as defined by our laboratory range. Previous reports using evacuated Vacutainer tubes have shown a shortening of the APTt related to an old stopper formulation containing isoprene and prolongation of the APTt after storage of samples in unstoppered tubes before testing. We used evacuated tubes with neobutyl rubber stopper formulation and performed all the tests from stoppered tubes. The precise cause of the variable prolongation of the APTt which we observed remains uncertain, but it may result from adsorption or inactivation of intrinsic contact coagulation factors.

With several commercial evacuated tubes for blood collection now being widely introduced into hospitals in the UK it is important that their effects on the coagulation system are compared with the standard syringe and polystyrene plastic tube method before they are considered for routine use.

Department of Haematology, Middlesex Hospital Medical School, London WIP 7LD

References

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P C Watt and J D Donaldson

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