INTRAMUSCULAR SALBUTAMOL IN ACUTE ASTHMA

Salbutamol has been shown to be effective in the management of status asthmaticus when administered by intermittent positive-pressure ventilation (Choo-Kang, Parker & Grant, 1970) and by intravenous injection (Fitchet, McNicol & Riordan, 1975). Recently the effects of intramuscular salbutamol in stable asthmatics were assessed in a dose-response study (Ingram, Gaddie, Skinner & Palmer, 1975). We now report, in a preliminary study, an evaluation of intramuscular salbutamol in acute asthma.

Ten asthmatic patients (age range 16-68 years) admitted urgently to hospital with an acute exacerbation of asthma were studied. Patients given steroids before admission were excluded. The procedure was explained and written consent obtained from each patient. Baseline recordings of pulse rate, blood pressure, FEV₁ and FVC (Vitalograph) and blood gases were established and a 12 lead ECG was recorded. The mean pretreatment FEV₁ was 0.73 l (range 0.39-1.32 l) and FEV₁/FVC ratio 46% (range 33-65%). Salbutamol was given intramuscularly as a single injection into the outer aspect of the thigh. The first five patients were given salbutamol (8 µg/kg body weight) and the second five 12 µg/kg.

Pulse rate, blood pressure, Lead II ECG strip, FEV₁ and FVC were recorded at 5, 10, 20, 30, 60, 120 and 180 min after injection. Arterial blood gases were measured at 30 min after injection,

oxygen having been withheld till then. Spontaneous side effects were recorded and the patients were asked about subjective improvement.

The graph (Figure 1) shows that the FEV₁ rose in nine of the ten patients after intramuscular salbutamol. Maximum rise in FEV₁ expressed as a percentage of the baseline FEV₁ ranged between +14% and +69% with a mean increase of +41%. There was a sustained increase in FEV₁ over baseline levels in nine patients at 2 hours. The condition of one patient, in whom the FEV₁ failed to rise, continued to deteriorate and additional drug therapy was required. The other nine patients showed varying degrees of clinical improvement but seven of the nine did require steroid therapy later.

Average maximum increase in pulse rate over baseline values was 13 beats/min with 8 µg/kg and 17 beats/min with 12 µg/kg. There was no change in blood pressure or arterial blood gases. In one patient with supraventricular extrasystoles prior to injection, an increase in their frequency after injection was noted. Another patient complained of transient pain at the injection site, but otherwise there were no side effects.

Thus judging from its effect on this small number of patients, intramuscular salbutamol appears to be effective and safe and might be an advance in the emergency treatment of asthma in that it could readily be given in the home as an

Figure 1 The % increase in FEV₁ in five patients after (a) salbutamol (8 µg/kg) and in four patients after (b) salbutamol (12 µg/kg).

alternative to intravenous aminophylline. No attempt as yet has been made to assess the relative merits of these differing doses though we confirm the greater rise in heart rate with the higher dose noted by Ingram and colleagues. Neither has the effect of repeat injections been assessed. If marketed a dose of salbutamol (700 µg) would seem appropriate for a 70 kg individual. A comparison of intramuscular salbutamol (8 µg/kg) with intravenous aminophylline is planned.

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A COMPARATIVE BLOOD LOSS STUDY OF FLOCTAFENINE AND ASPIRIN IN NORMAL SUBJECTS

Gastrointestinal bleeding due to aspirin has been known since Douthwaite & Lintott (1938) first observed gastroscopic hyperaemia in 80% of patients taking aspirin. Since then aspirin bleeding has been well documented (Lange, 1957; Alvarez & Summerskill, 1958; Stubbe, 1958). Holt (1960) found that 17% of subjects bleed more than 6 ml daily when taking therapeutic doses of aspirin. Patients on long term aspirin in moderate to high dosage, such as those with rheumatoid arthritis, may develop iron deficiency anaemia without frank evidence of bleeding (Summerskill & Alvarez, 1958).

Floctafenine is a synthetic analgesic of the hydroxyquinoline group and is an effective analgesic in acute and chronic pain (Lipton, Conway & Akbar, 1975; Vickers & Akbar, 1975; Burke, Akbar & Wright, 1975). Its chemical name is 2,3 dihydroxypropyl-N-(8-trifluoromethyl-4-quinolyl) anthranilate and its chemical structure is shown in Figure 1.

Floctafenine absorption is exclusively intestinal and is good in man, the high plasma clearance rate is primarily due to hepatic hydrolysis to floctafenic acid. Floctafenine is less protein-bound than floctafenic acid, diffuses more widely into tissues, but very low quantities of the ester and negligible quantities of the acid cross the blood brain barrier, indicating that their analgesic activity is peripheral. The elimination of

Figure 1 The structural formula of floctafenine

floctafenic acid and its metabolites which is mainly biliary is virtually complete in 24 hours. The main metabolite in both bile and urine is floctafenic acid. All products in man are excreted primarily in the form of ester and/or ester *o*-glucuronides (Pottier, Busigny & Raynaud, 1975).

The purpose of the present study was to estimate gastrointestinal blood loss on different dosage levels of floctafenine compared with aspirin in sixteen normal subjects.

Sixteen normal male subjects, ages ranging from 18 to 35 years, were investigated for blood loss using ⁵¹Cr-labelled red cell technique (Bannerman, 1957; Mollison, 1961). All subjects agreed to restrict alcohol and avoided other drugs and breakfast cereals during the study. All volunteers gave informed consent and continued normal work