

Discussion to the paper by J. S. S. Stewart

GRUBER. Mr Stewart said that acidosis causes shock. I think it is the other way round—shock causes acidosis and acidosis is a symptom; symptoms should not be treated when the underlying disease can be treated. None of his patients needed bicarbonate but all needed oxygen, and they all required proper respiratory care.

WALDER. I agree that they probably needed oxygen, but the oxygen is needed in the tissues and not only in the lungs.

STEWART. Treatment of the patients was not discussed in detail because my brief was to speak about acidosis. It included oxygen therapy in all and in others as appropriate bronchial aspiration, bronchoscopy and tracheostomy.

MCNICOL. If pH and PCO_2 are to be measured, the results must be available at once. Correction of acidosis with bicarbonate should not be empirical, since bicarbonate can precipitate pulmonary oedema.

McGOWAN. How was the pH estimated?

STEWART. On arterial samples using for the most part femoral artery blood and the Astrup machine. Some were done on finger pricks when the patients were better.

WALTERS. I have always been puzzled by the neostigmine-resistant state. The dose of bicarbonate which was said to have cured your patient was extremely small—100 mEq, which means raising the plasma bicarbonate by about 5 mEq/l. Was that degree of acidosis really enough to put the patient into a hypotensive state?

RICHARDSON. Many of these patients are chronic

bronchitics, and they cannot tolerate hyperventilation. If you give them a little carbon dioxide they won't be neostigmine-resistant, and it has long been the habit in Liverpool to remove all forms of carbon dioxide absorption from any anaesthetic these people are given.

WALTERS. The neostigmine-resistant state is said to be due to metabolic acidosis and not to respiratory acidosis.

STEWART. In some patients shock causes acidosis; in others where acidosis contributes significantly to the shock the pH falls below 7.0 and perhaps to 6.5 or lower. I agree that acid-base measuring facilities should be immediately available but cases of severe acidosis may have to be treated empirically, on the basis that 50–100 mEq of bicarbonate will not do harm. If there is an improvement in BP one must be prepared to give the same dose again very soon because, with the improvement in circulation, more metabolic acid products will be released from the tissues. It is worth treating relatively minor degrees of acidosis, about pH 7.2, for the patient may be at the edge of decompensation where the buffer systems are no longer able to accommodate even a small increase in acid load. Also I have the impression that correction of this degree of acidosis prevents renal shutdown and promotes urine flow.

HOPKIN. Nobody knows the cause of neostigmine resistance. It has become much rarer, and the reason may be that people now use less relaxant and more fluothane.