

## Letters to the Editor

### Lightning injury causing prolongation of the Q-T interval

Sir,

I read with interest Dr Palmer's article<sup>1</sup> but would like to offer an alternative interpretation of his electrocardiographic observation.

The seemingly prolonged Q-T interval in his patient struck by lightning may represent a pseudo-prolongation of the Q-T interval due to merging of T-wave with the U-wave as in quinidine ingestion.<sup>2</sup> That this might indeed be the case in his patient is obvious in leads AVR and V<sub>5</sub> of Figure 1 where a clear-cut change in inflection or a change in slope between the end of the T-wave and beginning of the U-wave is best seen. Unless a close scrutiny of all the 12 leads of the electrocardiogram is undertaken, pseudo-prolongation of Q-T interval may easily be mistaken for true Q-T prolongation.<sup>3</sup> Nowadays with several electrocardiographic leads being recorded simultaneously as a routine procedure, it is much easier to discern a T-U junction in one of these leads than if they are recorded separately. Of course, if a phonocardiogram was recorded simultaneously with an electrocardiogram, the differential diagnosis would be even simpler because the second heart sound appears before the end of pseudo-prolongation of Q-T interval but after the true prolongation of Q-T interval.<sup>3</sup>

In any case Dr Palmer made a very important observation, because prolongation of the Q-T interval, whether true or false, may be the prodrome of polymorphous ventricular tachycardia, torsades de pointes, ventricular fibrillation and sudden death in patients struck by lightning.

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### References

1. Palmer, A.B.D. Lightning injury causing prolongation of the Q-T interval. *Postgrad Med J* 1987, **63**: 891-894.
2. Cheng, J.T.O., Sutton, G.C., Swisher, W.P. & Sutton, D.C. Electrocardiographic observations during quinidine administration to patients with atrial fibrillation. I. Pseudo-prolongation of Q-T interval due to merging of T-wave with U-wave. *J Lab Clin Med* 1954, **44**: 779-780.
3. Cheng, T.O., Sutton, G.C., Swisher, W.P. & Sutton, D.C. Effect of quinidine on the ventricular complex of the electrocardiogram with special reference to the duration of the Q-T interval. *Am Heart J* 1956, **51**: 417-444.

### Subcutaneous insulin pump therapy in a diabetic patient submitted to major surgery

Sir,

Surgical risk is significantly higher in diabetic patients when compared with non-diabetics. To minimize this risk,

efforts should be directed towards a careful preparation of these patients leading to good metabolic control before, during and after surgery, so that the risk of anaesthesia and acute complications may be prevented and a rapid recovery and efficient cicatrization accomplished.<sup>1</sup>

Different and controversial therapeutic schedules have been used in the preparation of diabetics, implying that the ideal one has been hard to obtain. We have recently decided to start preoperative preparation of some diabetic patients using a subcutaneous insulin infusion pump that was maintained during surgery and the recovery period, instead of the previously used schedule, adapted from Alberti & Thomas.<sup>1</sup> Such a plan has already been adopted in minor operations not requiring intravenous fluids<sup>2</sup> and the following is the case report of the first time it was utilized during major surgery.

The patient was a 42 year old non-insulin dependent diabetic woman, on 5 mg of glibenclamide, three times a day. Upon admission to the hospital for cholecystectomy, glibenclamide was stopped and a subcutaneous insulin infusion pump (Medix Insumat 229) was implanted in the abdominal wall. The starting basal rate was 12 units of Insulin Actrapid HM 100 (Novo) and it was increased daily until a basal flow of 38 units was reached by the fourth day. Capillary blood glucose levels were tested three to four times a day and adjustments of the basal pump flow were made according to the obtained values. Satisfactory metabolic control was reached and maintained until surgery. The hyperglycaemia resulting from surgical stress was rapidly reverted and good metabolic control was restored by the second post-operative day. During surgery, the insulin pump catheter was removed from the abdominal wall and inserted in the right arm. No complications occurred during or after surgery.\*

We conclude that, although surgery is not a classical indication for the use of insulin infusion pumps, their use, which has already been advocated in cases of minor surgery not requiring intravenous fluids, is also a satisfactory method for patients who are to be submitted to major elective surgery requiring general anaesthesia, intravenous fluids and no oral nutrition for at least 48 hours postoperatively.

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### References

1. Alberti, K.G.M.M. & Thomas, D.J.B. The management of diabetes during surgery. *Br J Anaesth* 1979, **51**: 693-695.
2. Barnett, A.M., Robinson, M.M. Harrison, J.H. & Watkins, P.J. Mini pump: method of diabetic control during minor surgery under general anaesthesia. *Br Med J* 1980, **281**: 78-79.

\*A detailed description of this case has been accepted for publication in *Arquivos de Medicina* (Portugal).