Humane rapid tranquillization of an agitated patient with an implantable cardioverter defibrillator

Introduction

Rapid tranquillization is occasionally necessary in hospitals if patients become acutely disturbed for reasons of anxiety or psychosis. Such situations can arise on medical, surgical or psychiatric wards, and all clinicians need to be familiar with local rapid tranquillization guidelines and how to perform adequate risk assessment. Current National Institute for Health and Clinical Excellence (NICE, 2005) guidelines on the management of violent behaviour, on which many trusts base their own management algorithms, advise the use of non-pharmacological approaches such as 'talking down' and risk minimization as first line. Only if these fail should medications, restraint or seclusion be considered. Medications have potentially toxic side effects (Huf et al, 2007) and restraint may cause physical harm.

In practice, there are many reasons why communication and environmental approaches are often neglected in favour of drugs. This case report illustrates a situation where behavioural characteristics precluded oral medication, and the patient's medical history proscribed intramuscular

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Case Report

A retired civil servant, 76 years of age, was admitted to a psychiatric older adults ward because of his dementia. Two months previously he had suffered a cardiac arrest in the street and received cardiopulmonary resuscitation from a bystander for approximately 10 minutes. Paramedics who attended identified ventricular fibrillation and used a defibrillator to restore cardiac output. On arrival at the local accident and emergency department he was defibrillated again, intubated and sedated. Once stabilized on an intensive care unit he was transferred to a cardiology unit.

In his early sixties the patient had suffered a myocardial infarction and developed mitral valve dysfunction and chronic atrial fibrillation. He received a prosthetic mitral valve (St Jude valve), underwent coronary artery bypass grafting and was commenced on digoxin. Following the cardiac arrest he underwent angioplasty and insertion of a drug-eluting Taxus stent into the right coronary artery. An implantable cardioverter defibrillator was then implanted.

At the time of these procedures the patient was noted to have marked cognitive impairment, assumed to be secondary to hypoxic brain injury. Magnetic resonance imaging showed mild cerebral and left cerebellar changes suggestive of ischaemia. There was a small but old haemorrhagic focus in the left frontal lobe. Increased support in self-care at home was arranged and he was discharged on digoxin, furosemide, perindopril, pravastatin, clopidogrel, tamsulosin, finasteride, omeprazole and warfarin. Two weeks following this discharge his wife noted agitated behaviour and personality change. Their GP referred him to local mental health services and concerns about this level of agitation prompted the psychiatric admission.

On admission to the psychiatric ward the patient denied any past psychiatric history but acknowledged that he had always been absent-minded. He admitted to drinking half a bottle of wine a week but denied use of illicit drugs. His wife added that his mother had been diagnosed with schizophrenia in later life and had died at 65 years of age. She corroborated that his memory difficulties had predated his recent medical admission and had involved leaving the phone off the hook, unsafe use of the gas cooker, and difficulties finding possessions. Since the medical discharge his mood had become labile, marked by considerable anhedonia and episodes of tearfulness.

On mental state examination there was no evidence of any affective or psychotic symptoms, but pressure of speech and circumstantiality were noted. There was evidence of some persecutory beliefs regarding his wife and her attempts to contain him at home, but these were largely founded on reality. Cognitive testing revealed reduced 5-minute recall but no signs of occipital or parietal lobe dysfunction. Physical examination was unremarkable. Routine investigations were requested and he was commenced on amisulpride 50 mg at night in addition to his regular medications.

On the evening of admission nursing staff called the duty psychiatrist to the ward as the patient was mildly agitated, refusing his night-time medications. The doctor talked to him about the importance of his cardiac medications, and the patient became more agitated, displaying evidence of disorientation, confabulation and a lack of insight. Oral lorazepam was offered to reduce his agitation but he refused this. Believing that clinical notes were being inaccurately recorded he seized the history sheet and crumpled it in his pocket. At this point at least four nursing staff and the on-call doctor were joined by a member of security staff, presenting an environment potentially perceived to be threatening. The security guard reached into the patient's pocket to retrieve the clinical notes, and the patient's implantable cardioverter defibrillator activated, giving both an electric shock. The implantable cardioverter defibrillator activated a further three times.

At this point a decision was made to reduce the number of staff present and to clear some space around the patient. Tranquillization was indicated both for the patient's level of agitation and to allow assessment of any cardiovascular compromise. However, he refused oral lorazepam, and parenteral administration risked further dysrhythmias. Disarmed of pharmacological options the only viable strategy was to request one-to-one nursing in a quiet area and to use verbal de-escalation techniques.

The patient maintained an animated discussion with his nurse throughout the night but experienced no further shocks from his implantable cardioverter defibrillator. During his 5-week admission improvements were noted in his cognitive function, amisulpride was increased to 150 mg daily, and he became more settled. Outpatient review of his implantable cardioverter defibrillator revealed no abnormalities. He was discharged home with input from care workers, community psychiatric nurses and weekly day hospital placement. Almost a year on he remembers nothing of these events and reports feeling well despite some short-term memory difficulties. He is functioning well at home and his wife reports a general improvement in his mental functioning.

medication. First-line treatments were the only options, highlighting the aims of rapid tranquillization: to reduce patient suffering and risk, allow improved communication and ultimately to do no harm (Macpherson et al, 2005).

Discussion

Although there are no published data on the average number of shocks per episode associated with implantable cardioverter defibrillator use, the number experienced in this incident does seem unusual (Wilkoff, 2006; Sears et al, 2005). The patient's device had been programmed to shock on detecting atrial fibrillation or ventricular tachycardia, and analysis of the internal log for that night showed one episode of fast conducted atrial fibrillation at a rate of 220 beats per minute. This had brought him above the threshold for delivery of up to six shocks without pacing, and the four shocks which were delivered had converted him back into sinus rhythm at a rate of 158 beats per minute. An attempt at restraint may have increased his agitation and his heart rate (Mohr et al, 2003), triggering further shocks.

This patient's implantable cardioverter defibrillator was a dramatic and unusual reminder that options for rapid tranquillization diminish when a humane intervention is sought. The management strategy imposed by circumstances maintained his dignity, allowed improved patient communication and helped reduce the risk to him and others. Regardless of cause, confusion in a frail elderly patient should be managed conservatively. In the heat of the moment, with unfamiliar patients, and on out-of-hours shifts, non-invasive strategies can be neglected. Verbal de-escalation, diversion and reduced environmental stimulation should always be genuinely considered before recourse to intramuscular injections.

Communication skills are prominent in medical curricula but most junior doctors have never been taught how to respond to the acutely agitated patient, and limited advice is available (NICE, 2005; Houghton, 2006; Davison, 2006). All staff should be made aware of verbal de-escalation techniques and also trained to use them if patients are to be treated safely and with dignity. **BJHM**

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