Intentional overdose of warfarin in an adolescent: need for follow up

A 15 year old boy was seen in our emergency department with a history of ingesting 50, 5 mg tablets and 100, 1 mg tablets of warfarin. He had also taken 1,400 mg tablets of allopurinol. This was confirmed to be fairly accurate by counting the number of tablets missing. The boy was well and had no specific symptoms. His vital signs were normal. He was admitted for close observation. His initial INR was 1.1; there were no signs of any superficial or internal bleeding.

As would be predicted with such a large ingestion his INR gradually rose to a peak of 5.0 after three days (see fig 1). He was given fresh frozen plasma 15 ml/kg on two occasions 24 hours apart. He also had 10 mg of intravenous vitamin K injection twice on days 1 and 5. His INR came to normal values after five days and he was discharged home after several assessments and a major input from the psychiatric team. He did not show any signs of bleeding or any other adverse effects at any time. His vital signs remained stable throughout the hospital admission. His liver function, bone profile and full blood count remained normal and unchanged.

Oral anticoagulants inhibit the normal clotting process by interfering with the vitamin K dependent clotting factors (II, VII, IX, and X). On account of the differences in the degradation rates of these factors the therapeutic effects of warfarin are usually delayed by 8–16 hours after oral or intravenous doses.

Allopurinol interferes with the hepatic degradation of oral anticoagulants hence increasing the risk of bleeding.

There are several reports in the literature of accidental ingestion of rodenticides, which contain superwarfarin compounds. It has been shown in a recent review that these in general do not merit investigations or follow up. However, there are very few reports of intentional warfarin overdoses and none where allopurinol aggravated the damage. Our case report describes a boy with intentional overdose, which did cause serious alterations of his coagulation state. This report emphasises the need for serial prothrombin times in children who present with large intentional ingestion of warfarin even if they are completely asymptomatic.

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References

Bilateral spontaneous pneumothorax

Wilkie et al describe a case of bilateral spontaneous pneumothorax in a 39 year old man. We are concerned that the conclusion drawn, namely the importance of urgent chest radiography for all patients in respiratory distress should not take precedence over the even more urgent need to ensure adequate oxygenation of the patient.

It appears clear that the patient was at significant risk of cardiorespiratory arrest despite stating that “cardiac output was not impaired.”

We are told that despite only having an arterial oxygen saturation of 60% on 15 litres of oxygen and despite signs of significant hypoxemia on blood gas analysis, the decision was made to proceed to radiography before intubation.

We would argue that prompt intubation should have preceded radiography, as delay in achieving oxygenation while awaiting the chest radiography could have had catastrophic consequences.

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Effectiveness of double Tubigrip in grade 1 and 2 ankle sprains

We were interested to read the paper by Watts and Armstrong that looked at the effectiveness of double Tubigrip in grade 1 and 2 ankle sprains. The authors’ aim was to carry out a well designed randomised controlled trial that would determine whether functional recovery was achieved more rapidly with double Tubigrip or with no treatment. We have some reservations about their study design, the data collected, and the conclusions. Of the 485 patients who were eligible to enter only 197 completed the trial. This is equal to a 59% drop out rate. Basic validity of a controlled trial requires that at least 70% of those eligible complete the trial.

The main outcome measures were crude by any standards. The only significant difference shown by their study was in the need for analgesia. But the question “did you take pain killers?” can hardly be regarded as a sensitive tool for determining the amount of pain suffered by the patients. Had both groups of patients been issued with blister packs of a standardised analgesic and the number of tablets taken observed then a more accurate estimation of pain suffered could have been made. No attempt was made to re-evaluate the patients for ankle instability, which is the major complication of lateral ligament injuries. If we were to accept these findings and stop using double Tubigrip in ankle sprains, such information would be vital.
We were also concerned at the one week follow up The authors themselves state that grade 1 and 2 ankle sprains can take 10 days to recover to a level where the patient can return to work and yet the mean number of days off work was less than four in both groups. This would suggest that these were extremely mild ankle sprains and not reflective of the whole spectrum of this injury. Therefore the accuracy of grading the injuries acutely rather than at review several days later must also be questioned.

We feel that overall this study adds little to the literature on ankle sprain management, and certainly does not provide any evidence for a change of current accepted practice.

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References

Authors’ reply
We welcome the opportunity to respond to the comments made by Drs Lewis and Atkinson on our recently published paper.

Firstly our Consort diagram clearly shows, 85 patients declined randomisation, were not entered and therefore did not form part of the study population. We included this information to illustrate the clarity of our study and because we felt it was interesting to note the number of patients who did not want to take part in a study aiming to recruit 400 patients. Our “drop out” rate was 203 of 400 patients—that is, 50.75%. This weakness is covered fully in our discussion, where we pointed out that our study might be best considered as a pilot study. Even so our study, with 197 patients, is still the largest to tackle this subject. Previous studies have also suffered from disappointing follow up rates and while using a funded research assistant may help, the fact remains that ankle sprains have a good prognosis with many patients not even seeking medical attention. Getting patients to consider their follow up telephone questionnaire or appointment as anything other than an inconvenience when they themselves feel significantly better is a difficult problem to solve.

We feel that Drs Lewis and Atkinson have missed the point when they criticise one of our chosen outcome measures. The fact that there was no difference between the groups is surely the point? We did find that significantly more analgesia was required in the double Tubigrip group and therefore obviously somehow more analgesia was required in the double Tubigrip group and therefore obviously not “comfort” of a support bandage. Indeed we have previously published our paper.

Echence the choice of such a basic question as “Did you take painkillers for your ankle injury?”. Blister packs can get lost, patients may use them for other things or give them away and, of course, the patient needs to attend for follow up.

Do Drs Lewis and Atkinson routinely review all grade 1 and 2 ankle sprains for instability? In a study in which 150 patients with ankle sprains (not graded) were given no analgesia but treated with elevation for 24 hours followed by motion exercise and weight bearing according to ability, 8% of patients had residual symptoms that they considered inconvenient at one year. The key to preventing chronic problems after ankle sprains is appropriate rehabilitation and the advice given to these patients was vital.

Drs Lewis and Atkinson also criticise our choice of follow up at one week and the fact that our patients seemed to return to work rather earlier than expected, suggesting that the accuracy of grading acute injuries rather than review several days later is questionable. However, the work used to quote anticipated recovery times for the different grades of injury was carried out almost a quarter of a century ago. As we said in our paper, the factors affecting patients’ decisions for an early return to work/activities is complex but there have clearly been massive social changes over the past 25 years that are likely to influence these variables. We believe these patients were graded accurately and we continued reinforcing the grading system throughout the trial period. Also, deferring assessment and grading of sprains for several days is not an option as there is agreement that the excellent prognosis of these injuries means patients presenting more than 24 hours after injury should be excluded from trial entry.

We feel that Drs Lewis and Atkinson’s final comments are unjustified. Research does not have to be (and probably never can be) perfect to be published, but what is vital is that the authors describe and explain their study’s shortcomings. Our study was transparent and honest and remains the largest one in this area to date. We feel that by stimulating discussion we have certainly added something to this debate.

Finally, we find Drs Lewis and Atkinson’s last line ironic. Where is the evidence to make double Tubigrip “accepted practice” in the first place?

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References

Authors’ reply
We thank Dr Brooks for his comments on our paper. In answer to his question, we have consistently found that a full explanation of the nature of the injury, with advice on immediate and subsequent rehabilitation (how much to walk, elevation, ice treatment, and analgesia) and a statement as to why “those stretchy bandages” are not recommended, satisfies our patients with ankle sprains. This advice takes approximately one minute to give and is supplemented by a written advice card.

We would like to point out that all the patients in our study were given analgesia on presentation and those who were genuinely unable to walk were given crutches to aid mobilisation. This is our standard practice and we would suggest that it is the reassurance and explanation that encourages those patients who are “unable” to walk to try and walk out of the department, rather than the “comfort” of a support bandage. Indeed we would like to draw attention to the finding in our study that the double Tubigrip group required significantly more analgesia than the
control group. Although the factors responsible for this may be varied, we already know that the use of a cylindrical bandage where the ankle has a 90° angle tends to produce a compressive band across the front of the joint, essentially causing a “tourniquet effect”. Hence it is debatable how much “comfort” patients derive from this treatment and we feel that the potential for harm should not be dismissed.

Finally we would certainly agree with Dr Brooks that patient education is vital for any call for the cessation of routine double Tubigrip use to succeed. However, we suggest that this is easily and rapidly achievable at the initial presentation, by taking a little time to give a full explanation to the patient.

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References

Authors’ reply
We note with interest the comments made by Muthu and Fraser-Moodie. They discuss the occurrence of a locked metacarpophalangeal joint that is usually caused by snagging of the collateral ligaments over an adjacent osteophyte in older patients, which is obviously a condition that should be brought to the attention of accident and emergency staff. The main differential diagnosis being a trigger finger.

However, it is an entirely different condition to the one in our case report, which is a serious injury and one that is associated with serious and characteristic radiological changes requiring the early input of the hand surgery service.

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References

Calcium salts in management of hyperkalaemia
In response to the letter by Dr McMorran we would like to comment on the use of calcium salts in the management of hyperkalaemia. It is worth reiterating that the two formulations of intravenous calcium have distinct properties. The amount of elemental calcium (Ca++) is 8.9 mg/ml as 10% calcium gluconate and 27.2 mg/ml as 10% calcium chloride solution. The availability of Ca++ may be limited in the calcium gluconate because of chelation,
Until hepatically metabolised. In haemodynamic instability with poor liver perfusion this might prove significant, hence the recommendation for use of the chloride salt in cardiac arrest. It should be noted, however, that several studies have failed to show difference in availability of ionised calcium with the hepatic anephic phase of liver transplantation. Although the literature does not provide a definitive answer, we recommend that the chloride salt be used with the emphasis on eliminating concern over the possible impact of hepatic metabolism of the gluconate, and avoiding the confusion inherent in having two formulations with different doses on the resuscitation trolley.

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References

BOOK REVIEWS

Accident and emergency: theory into practice

I was delighted to be asked to review this book as on the first superficial glance both the format and content looked very appealing. It is a wide ranging book covering both the clinical and professional needs of nurses in the accident and emergency department. It also seeks to uncover the theoretical and research basis for current day practice.

In the clinical sections, problems are approached from an anatomical and physiological view, giving a sound basis for the assessment and management of cases. I particularly liked the clear anatomical diagrams, with just enough detail. I would have found the additional use of some radiographs useful as they are of particular relevance. The book covers the whole case mix of any department, approached from both a systems approach and from an age banded approach. I did feel that certain sections were written from a theoretical viewpoint rather than from experience of current clinical practice. In particular, in the section preschool children on viral illness it was suggested that nebulised adrenaline (epinephrine) was the first line treatment. This is clearly not needed in the mild cases and should only be used in the severe cases when the child is to be admitted and will require an intensive care. It can cause dangerous rebound stridor and facilities for intubation must be ready.

The section on abdominal emergencies was good, but the assessment of abdominal trauma by primary and secondary survey was mixed up and very confusing not following the ATLS guidelines. The patient was log rolled in both the primary and secondary survey.

The section on minor head injuries was excellent. This is an area that often gets too little attention considering the number of patients presenting. The sections on pain management and violence and aggression were well written and useful, as was the whole section on psychological problems.

I found it odd for the section on nurse triage to be so far in. The boxed it is the first contact most patients have with a nurse whatever their condition. In view of the importance of the nurses role and responsibility in this area, the section was too short, not covering the principles of effective and accurate patient assessment, but in a limited time with limited resources.

Overall, the clinical areas of the book will be very useful as a bench reference book for nurses and the other areas are excellent to help nurses consider the breadth of professional issues they meet. I would recommend it to my nursing colleagues and also to my medical colleagues to give them some insight into the problems their nursing colleagues meet every working day.

P O Brennan

Fibrinolytic and antithrombotic therapy: theory, practice and management

Developments in fibrinolytic and antithrombotic therapy are among the most important recent advances in emergency medicine. This book provides a comprehensive guide from basic principles to clinical practice. Although it may fit into (a) large pocket, this is very much a reference book. The writing is precise and economical, largely unencumbered by conjecture or opinion, allowing vast amounts of factual information to be conveyed. While this creates impressive scope and depth it does little to engage the reader.

Part 1 covers the basic science, detailing concepts and diseases vaguely familiar from tortured nights of MRCP revision (and many others that weren’t). If you agree that “the prevention and cost-effective management of thrombotic disorders requires a knowledge of fundamental pathobiologic principals…”, you will find this section valuable. I must admit that I questioned the relevance of such knowledge the first time I learnt it. As it seems to have suffered disuse atrophy with clinical practice, I remain unconvinced.

The pharmacological agents are the focus of part II. Data from clinical trials are reproduced with merciless efficiency but little additional interpretation or explanation. Given that such data may rapidly be accessed electronically, I couldn’t help feeling that an opportunity had been missed to provide either some guarantee of systematic secondary data collection, or some narrative to lighten the reader’s task (“acute coronary syndromes: fundamental concepts”) initially used a physiological principle, the open vessel hypothesis, to illustrate practical management issues with good effect. Unfortunately, chapter 18 places us back into a tabulated list of clinical trials.

The second half (parts IV to VI) examines practical management issues. Tables and algorithms are provided to assist the reader. The tables often seem to have been constructed from a pathological, rather than clinical, perspective. Lists are comprehensive but not ordered, and common items may even be neglected. For example, the top three differential diagnoses of chest pain are aortic dissection, expanding thoracic aneurysm and aortic transection. Haemorrhage into the abdominal cavity and gastrooesophageal reflux and anxiety are not listed. The algorithms, particularly those involving risk stratification, present a practical and innovative approach to clinical management, but many require adaptation to the more conservative, and resource limited NHS.

In terms of factual data per square inch of paper, this book is truly awesome. However, A&E clinicians facing the challenge of keeping up to date with a wide array of rapidly changing health technologies will probably prefer a more selective and more readable text.

S Goodacre

Trauma: practical application of recent advances

In his book the editor has given an overview of the varied nature of trauma and its effect on the individual and society. He has complemented this with individual chapters on specific injuries and their management where scientific advances have improved treatment and outcome as determined by evidence based practice.

Throughout the book, whether dealing with individual body system trauma, multiple casualties or the consequences of trauma, the need is highlighted for an organisational approach to trauma care with the development of strategies to deal with injury and its associated complications. In the relevant chapters there is discussion on the underlying biological mechanisms involved in injury and healing with reference to outcome. However, a comprehensive understanding is not possible within the scope of this book.

The chapters on epidemiology, which show its still depressing trends, and on prehospital care, which is changing rapidly with resource allocation, injury prevention, comorbid factors and injury in the aging population complemented the book. Many of these subjects are often neglected or poorly written on and it was refreshing to note that these were included.

The specialised chapters on trauma care were well written and interesting despite their specialist nature. Although of minimal interest to the generalist, they would be a valuable asset for those people who have to treat specific injuries.

In these times when the trauma epidemic shows no signs of cessation, and with an increase in the aging populations who are susceptible not only to injury but to the consequences of injury, there is a need for both accident prevention and development of rehabilitation. This has been covered comprehensively in this book.

Overall the editor has succeeded in covering trauma in a global fashion, taking the reader through the prehospital phase, through acute management and into the field of rehabilitation in an interesting way. He has combined the historical, developmental and factual components in a descriptive evidence based manner to make this book both interesting and informative reading.

www.emjonline.com
In this current atmosphere of resource allocation, prioritisation of care and risk management, those clinicians who practice evidence based medicine will find this book extremely useful.

This book would be useful for either trainees or consultants involved in the management of trauma care.

P A Evans
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Self-assessment colour review of paediatric emergency medicine

This is a fun book to have on your shelf! This book comprises 209 picture quizzes and answers, the pictures being well illustrated, full colour plates containing a mixture of common and not so common paediatric conditions. The contributors are international from Australia, Uganda, Birmingham and Sheffield. The pictures relate to paediatric conditions including surgical, medical, metabolic, ophthalmological and dental conditions. Some of the cases are not commonly seen in UK practice, for example the 10 year old who sustained a penile tip injury due to a gunshot wound, or another example of a child sustaining an accident due to his arm becoming trapped in a wringer!

Overall this book is well written and contains few non-English phrases; however, when they do occur they are somewhat odd. An example might be “the outlook for the testis is superior if the hernia can be manually reduced!”. However, this is to be somewhat pedantic about what is a very handy and useful book certainly for study towards MRCPCH Part II but will be of interest to all clinicians who encounter children.

I Maconochie
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I must confess to having had a thoroughly enjoyable evening simply looking through at a wide variety of different conditions some common, some rare. I think the authors have succeeded in producing a well illustrated and informative addition to paediatric emergency medicine.

How to present at meetings

We have all attended poor presentations at meetings and most of us have gained our revenge by presenting poorly. It is an effort to break this cycle of retribution Hall et al have produced their book How to present at meetings. This text is described as providing “a basic framework around which a proficient talk can be built” and there is no doubt that it succeeds in its aim. This short, clear and humorous book is written by a number of accomplished speakers, each of whom attempt to explain how to give a presentation that will be memorable for all the right reasons. The authors obviously write from experience and their explanations and advice are often illustrated through humorous examples of their own mistakes. This concept is taken to its logical conclusion with a whole chapter dedicated on how to get your “bad” presentation just right (or is that “just wrong?”).

Fortunately the authors take their own advice and have produced a collection of brief, clear chapters, which make for a very readable book. This format means that it can be picked up in a spare five minutes or read completely within an hour depending on circumstances. The book is aimed at those speaking at formal meetings but the advice is as relevant to local teaching as it is to an international conference.

There is plenty of advice on preparation of your presentation and emphasis on its importance so if you are looking for short cuts you will not find them in this book. There are also chapters on the style of presentation and delivery as well as advice on stage presence from one of medicines many performers Alan Maryon Davis. The two chapters on visual aids are welcome and should be compulsory reading for anyone who ever steps to the front of a lecture theatre. One of these chapters is given over entirely to computer generated slides and will hopefully bring relief to those of us who develop a nervous twitch at the sight of spinning letters and the sound of a racing engine! Sandy Macara gives advice on dealing with questions from the audience but also on dealing with newspaper, radio and television interviews.

There is no doubt that a book like this should be required reading by anyone who makes a presentation and a departmental copy for all staff to refer to would certainly be useful. My final recommendation, however, should be that this book is posted to anyone presenting at a BAEM conference: it would improve the quality of presentation and guarantee we all get to coffee and biscuits on time!

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Intentional overdose of warfarin in an adolescent: need for follow up

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