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# Commentary

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This review of oncological emergencies offers an excellent account of the most common pitfalls in management of patients with malignant disease. Tumour lysis is a problem of newly diagnosed patients. The other conditions Dr Nicolin describes may be seen either at diagnosis, or in late relapse when patients carry a large tumour load and disease is not controlled. Prompt recognition is of the greatest importance in avoiding morbidity or death, and Dr Nicolin has provided a useful and concise summary.

The use of urate oxidase in patients at high risk of developing tumour lysis syndrome has proven to be highly successful. Recent publications [1–5] have confirmed the safety and efficacy of recombinant urate oxidase, and its superiority to allopurinol in reducing plasma uric acid levels and, in time, this will undoubtedly become the drug of choice in newly-diagnosed high-risk patients. There is a theoretical risk that the efficacy of urate oxidase will be reduced if given after recent allopurinol: inhibition of xanthine oxidase causes accumulation of hypoxanthine and xanthine with a risk of consequent renal obstruction. Effective inhibition effectively removes the substrate for urate oxidase, and its action is therefore lessened. If use of urate oxidase is anticipated, it is wise to use it before any allopurinol is administered.

The control of hypercalcaemia has been made easier by the introduction and more regular use of bisphosphonates. These agents are helpful both in early management and in the control of symptoms for patients with advanced, treatment–resistant disease.

Management of the superior vena cava syndrome is a challenge because of the simultaneous need to provide accurate histological immunohistochemical and molecular genetic information via a biopsy under general anaesthetic at a time of major anaesthetic risk. As Dr Nicolin has explained, a balance must be found for each patient, allowing the greatest chance of optimal treatment. The approach will vary according to the exact clinical circumstances and the resources of the individual centre, but should be by the least invasive strategy compatible with patient safety. When an initial biopsy cannot safely be obtained, the response to chemotherapy may suggest a diagnosis. An anterior mediastinal mass which responds rapidly to single agent corticosteroid is likely to be of T lymphoid lineage, but responses may be seen in Hodgkin's disease. Rapid response may lead to loss of diagnostic material, but so long as the biopsy is well timed, it is usually still possible to identify areas of preserved tumour tissue for histological and immunohistochemical staining. The patient needs to be reassessed frequently, and the diagnostic procedure undertaken as soon as safely possible. Radiotherapy is now rarely used because of the practical problems and the long-term sequelae of mediastinal irradiation. Agents such as vincristine (''Oncovin'') and corticosteroids may allow a 'slow' reduction and subsequent biopsy.

Children who present with spinal cord compression due to an extrinsic lesion are a heterogenous group, but the threat of acute neurological deterioration requires rapid intervention. The young patient who presents with severe or persistent back pain, or gait disturbance requires early investigation with magnetic resonance imaging (MRI) to reduce the incidence and/or severity of paraplegia [6]. Diagnosis may be possible without surgery, as in neuroblastoma, although there is still a need for fresh material for biological studies. Complete or major partial resection of these tumours may be impossible without extensive spinal reconstruction, but, fortunately, there is an increasing acceptance that high dose corticosteroids, biopsy and 'non-radical' decompression or biopsy and chemotherapy are effective alternatives. Whilst high dose corticosteroids may cause the same kind of diagnostic difficulty as seen with anterior mediastinal masses, the clinical benefit of reduction of cord swelling is likely to be greater.

The distinction between intrinsic and extrinsic spinal cord compression needs to be made, since presenting

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features may be similar, but the surgical approach is different. Intrinsic spinal cord lesions are usually astrocytomas (glioma, oligodendroglioma) usually of low grade but occasionally of high grade, or ependymomas. Where possible, complete surgical resection of intrinsic cord lesions should be attempted. This may involve multiple laminectomy or laminotomy, although here, too, chemotherapy and radiotherapy have a role.

Dr Nicolin has rightly concentrated on a few, more common emergencies, but it is worth highlighting some other points. Many emergencies are iatrogenic, a consequence of the narrow therapeutic index of currently available therapies. Bone marrow failure, mucositis and extravasation-related skin toxicity are examples. Other toxicities are relatively uncommon, yet may affect major organs. Such toxicities may present as oncological emergencies, but may be poorly recognised by inexperienced staff. Actinomycin-D-related veno-occlusive disease [7], cytarabine- or L-asparaginase-related pancreatitis and ifosfamide-related encephalopathy are examples, and prompt action should reduce morbidity and mortality. The iatrogenic nature of this group of oncological emergencies offers scope for improvement. Better understanding of chemotherapeutic drugs allows safer treatment with more predictable effects. For example, a pharmacological explanation has been found for the relationship between exposure to high levels of L-asparaginase and vascular thrombosis, particularly if there are other pro-coagulant risk factors. For others, adverse side-effects are still unexplained.

Haematological problems are the cause of many emergencies in oncology. At presentation, and during conventional and high-dose chemotherapy, the consequences of bone marrow failure are diverse. Infection risk correlates with the depth and duration of neutropenia and the risk of haemorrhage with thrombocytopenia. Inappropriate activation of the clotting system, diffuse intravascular coagulation and thrombotic thrombocytopenia have many causes, and may have widespread and profound effects on the patient. The triggering factors differ from patient to patient, since both the disease (amongst the acute leukaemias, Acute Promyelocytic Leukaemia is a particularly common association) and the treatment may contribute. Once again, early recognition is an important part of appropriate management.

Although infection was dealt with in an earlier update, certain patterns of infection need to be recognised early. Shock caused by bacterial infection with neutropenia must be recognised very promptly indeed. Specific localised infections, such as cellulitis from relatively minor skin breaks or from perineal mucositis may lead to severe morbidity if not identified and appropriately treated at an early stage.

Death from cancer after attempts at curative therapy is a sad, but accepted, element of paediatric oncology practice. As the overall efficacy of treatment for childhood cancer improves, correct emergency management, including acute complications of therapy, becomes relatively more important. The prevention of unexpected death and of avoidable morbidity are always major goals. How can deaths and unnecessary morbidity be prevented? Early recognition of the sick child is undoubtedly important, but in some instances it is difficult to identify where improvements might be made. For example, the child presenting with an acute intracranial bleed has suffered injury before reaching hospital, and the outcome is often dependent upon the degree of such injury. Improved intensive care facilities outside regional centres and coordinated transfer to larger units will doubtless save some lives, but there will inevitably be some children for whom little could ever be done. Vigilance and the ability, via teaching and experience, to anticipate and recognise rapidly-evolving patterns of disease are, and always will be, crucial components of acute oncological care.

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