Comparison of cytological with histological findings shows clear discrepancies, primarily in the minor degrees of cystic hyperplasia, which are often difficult to categorise. It is important to note that in no case was a more advanced hyperplasia seen on histological examination than was detected by cytology and, in particular, all the cytological reports of malignancy were confirmed.

Cytological examination is clearly of special value in the investigation of women with postmenopausal bleeding, in whom there are much greater risks associated with general anaesthesia and in a high percentage of whom no curettings are obtained.

The management of the women with evidence of cystic or atypical hyperplastic changes in the endometrium is still unresolved. Progestogens can clearly be used to reverse these changes, though there may be no symptomatic improvement and this may precipitate surgical intervention. It is also likely that the endometrium will become abnormal again, because the tendency to hyperoestrogenism remains. Endometrial aspiration is obviously a useful method of screening for such a change, though much work still needs to be done to determine the clinical validity of treatment with progestogens in these women.

It is clear that the single most important criterion is the cytologist's ability in reporting the findings. We hope that the results of this study will stimulate further interest among gynaecologists and cytologists. It is only with the gynaecologist's trust in the method that the cytologist or histologist will be able to obtain the necessary experience.

This review of routine clinical experience therefore confirms our earlier findings in controlled prospective studies—namely, that endometrial aspiration can be used for the preliminary screening of women who are at risk of endometrial carcinoma. We recommend it as the primary investigation in women with dysfunctional uterine bleeding and bleeding during and after the menopause. There are obvious benefits both for the women in our care, as unnecessary hospital admission and anaesthesia are avoided, and also for the health service, as waiting lists are reduced and finances conserved.

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Clinical Topics

Guidelines for initial management after head injury in adults

Suggestions from a group of neurosurgeons

Recent studies in the United Kingdom, the United States, and Australia have shown how variable is the part played by neurosurgeons in the management of patients with head injuries,[1-4] and focus attention on how often avoidable mortality and morbidity occur.[5-6] The most common avoidable factor is delayed detection of features that can lead to secondary brain damage. These include intracranial haematoma, open skull injury, and extracranial injuries and complications. The objectives of management therefore should be to prevent secondary brain damage by prompt diagnosis and treatment of these conditions and then to promote the fullest possible recovery and social integration of survivors.

Concepts of certain intracranial events that occur soon after injury are changing in the light of evidence from computed tomography. In particular, it is clear that intracranial haematomas are more frequent and develop sooner after injury than was previously realised. With computed tomography haematomas can sometimes be detected before serious cerebral compression has become clinically obvious; this facilitates early surgical intervention, which in turn appreciably reduces mortality and morbidity.[7 8]

Changes in policy designed to improve the management of head injuries in the UK need to take account of local organisational factors, including the facilities available to various specialists in different parts of the country. The need to redeploy regional resources to maximise the effective use of avail-

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able revenue could entail changing the balance of care provided by different specialists.

Radiologists are concerned to reduce the number of skull *x* ray examinations with negative results that are performed on patients with head injuries.[9 10] There is also increasing doubt about the value of admitting so many mildly injured adult patients for a period of observation in general hospital wards.[12] By contrast, neurosurgeons in several countries are becoming concerned that more patients should reach them sooner if they are to benefit from computed tomography, from skilled surgery, and from special monitoring. Not every patient in whom a computed tomogram shows a haematoma requires an immediate operation, but a decision about this can be made safely only in a neurosurgical unit. Neurosurgeons also wish to participate in the formulation of policies for the care of patients by other specialists who look after milder injuries and who are responsible for the initial management of more serious injuries.

A group of neurosurgeons has been meeting informally in the past three years at the King's Fund to discuss policies for the management of head injuries of all degrees of severity. Management depends on a series of decisions, based on answering certain questions (table). In our view there is now sufficient published evidence to formulate guidelines for the first three decisions, at least in adults. In putting forward specific proposals we hope to encourage those concerned with the care of head injuries in the acute stage to consider the problems that such patients present in their particular locality. We are well aware that arrangements vary between regions; in a few places, for example, computed tomography is available outside regional neurocentres. But we have assumed the more common situation where 24 hour scanning facilities are limited to the regional centre, so that access is available only to selected patients, usually after transfer to the neurosurgical unit.

Management decision after recent injury

In the accident and emergency department
Which patient should have a skull *x* ray?
Which patients who are talking and seemingly recovered should be admitted for observation?
*In the primary surgical ward**
Which patients require neurosurgical consultation with a view to computed tomography or specialised monitoring or management?
How long should patients be observed before the risk of a complication becomes negligible?
In the neurosurgical unit
Which patients should have particular procedures (whether for investigation, monitoring, or treatment)?
When can patients be discharged to other places for further management?
Which patients require special arrangements for rehabilitation?

* The term "primary surgical ward" refers to the place where the patient is first admitted, whether that is a short stay bed in an accident and emergency department or a hospital ward.

It is our contention that a consensus about what management is locally appropriate could appreciably improve the overall care of head injuries in a region. But this would happen only if the agreed policy became widely known, especially among junior staff—who are everywhere the most directly concerned with these patients.

Reasons for skull x ray examination[13]

(1) To guide the management of a patient who will be admitted whatever the *x* ray film shows—for example, by showing the presence and the site of a fracture or the presence of intracranial air.

(2) To decide about the need for admission of a patient who is otherwise seemingly well enough to go home.

A number of patients who are fully alert, some of them never having been unconscious, have a fracture of the skull vault. Those with a compound depressed fracture are at risk of developing intracranial infection if treated as though they had only a simple scalp laceration.[14] Those with a closed linear fracture have a considerably increased risk of developing intracranial haematoma. On the other hand, an adult without a fracture who is fully orientated has a less than one in 1000 risk of developing a haematoma.[11 15]

Reasons for admission

(1) To *treat* a patient with obvious lesions such as brain damage or a compound depressed fracture.

(2) To *observe* a patient who is not in need of immediate treatment but who is at risk of developing complications.

Reasons for neurosurgical consultation

(1) To ensure early detection of intracranial haematoma, adequate débridement of compound fractures of the skull vault, and assessment of suspected fractures of the base of the skull.

(2) To provide optimum management of a patient in coma due to severe traumatic brain damage.

INTRACRANIAL HAEMATOMA

Traditionally an intracranial haematoma was suspected only when, after a period of observation, a patient showed deterioration of level of consciousness or developed unequal pupils. But these classic syndromes are uncommon and an intracranial haematoma is now often found by computed tomography in certain high risk categories of patient before such signs develop.[16] There is an appreciable risk of a haematoma in patients with a fracture who are not fully orientated (one in four); focal signs or a fit in a patient with a fracture also indicate a high risk. Such patients are a small minority of those admitted to hospital but they need to undergo computed tomography as soon as possible after injury.

In patients with a fracture who are fully conscious the risk of haematoma is about one in 30, and in those who are confused but have no fracture it is one in 100. Without an increase in facilities for computed tomography it may not be feasible to scan urgently all of these last two groups of patients. They should therefore be observed carefully and as soon as any evidence of deterioration occurs they should be transferred to the neurosurgical unit for scanning.

PATIENTS IN COMA OR WITH MULTIPLE INJURIES

Patients in coma also have a high risk (one in four) of a haematoma, even if they have not had a lucid interval and do not have a fracture. There are hazards in managing comatose patients in general intensive care units, without access to repeated computed tomography, to intracranial pressure monitoring, and to immediately available neurosurgical opinion and operating theatre. Furthermore, the facilities of a neurosurgical unit are necessary to determine the need for, and effects of, certain methods of intensive care management that are still controversial.

When there are major extracranial injuries the balance between benefits and risks will have to be weighed before recommending transfer to the regional neurosurgical unit. There are hazards associated with the transfer of patients in coma, or with multiple injuries,[17] but these can be minimised by taking precautions. The final decision will depend largely on local circumstances, such as the distances, the availability and siting of various specialist facilities, and the particular pattern of injuries.

Guidelines for management

Clinical judgment is always necessary, but the following guidelines may be helpful.

FOR SKULL X RAY EXAMINATION AFTER RECENT HEAD INJURY

(1) Loss of consciousness or amnesia at any time.
(2) Neurological symptoms or signs.
(3) Cerebrospinal fluid or blood from the nose or ear.
(4) Suspected penetrating injury.
(5) Scalp bruising or swelling.

FOR ADMISSION TO A GENERAL HOSPITAL

(1) Confusion or any other depression of the level of consciousness at the time of examination.
(2) Skull fracture.
(3) Neurological symptoms or signs.
(4) Difficulty in assessing the patient—for example, alcohol, epilepsy, or other medical condition.
(5) Lack of a responsible adult to supervise the patient; other social problems.

Note—Brief amnesia after trauma with full recovery is not sufficient indication for admission. Relatives or friends of patients sent home should receive written advice about changes that would require the patient to be returned urgently to hospital.

FOR CONSULTATION WITH A NEUROSURGEON

(1) Fractured skull with any of the following: confusion or worse impairment of consciousness, one or more epileptic fits, or any other neurological symptoms or signs.
(2) Coma continuing after resuscitation—even if no skull fracture.
(3) Deterioration in level of consciousness.
(4) Confusion or other neurological disturbances persisting for more than eight hours, even if there is no skull fracture.
(5) Depressed fracture of the skull vault.
(6) Suspected fracture of base of skull (cerebrospinal fluid rhinorrhoea or otorrhoea, bilateral orbital haematoma, mastoid haematoma, or evidence of penetrating type of injury such as spike or gunshot).

Note on transfer of patients in categories 1-3

(1) They should be referred urgently.
(2) Initial resuscitation for extracranial injuries and complications must be completed—for example, for shock, blood loss, compromised ventilation—and first aid for limb fractures.
(3) Ensure precautions to reduce risks en route to neurological unit (adequately equipped ambulance and a trained doctor or nurse as escort).
(4) Send all notes and *x* ray films.

Discussion

The guidelines for skull radiology here take account of those already suggested by the Royal College of Radiologists[10]; their data suggest that the use of guidelines could reduce the number of studies with negative results and still detect 94% of patients with a fracture.[9] There is also evidence that guidelines for admission similar to those proposed here can reduce considerably the number of patients with minor head injuries admitted to hospital, without demonstrable risks.[11 12] The justification for reducing resources expended on minor injuries, which in theory may result in a rare failure to admit a patient who later develops a complication, is that the earlier investigation of patients at high risk of an intracranial complication will improve considerably the overall results.[8] To make this possible more patients need to go to a neurosurgical unit for computed tomography, and to reach there sooner than many do at present.

These guidelines would undoubtedly result in an increased number of transfers to regional neurosurgical units in certain parts of Britain. A method for estimating the number of neurosurgical beds that would be needed has been published,[18] and this enables the neurosurgical resources required to be calculated according to local circumstances and policies. Provided that a sensible policy can be evolved for discharging patients once they no longer require the special facilities of a neurosurgical unit, the burden on these regional centres need not be great.

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What is abstract thinking?

Abstract thinking is thought of a higher and mainly human function. Strictly, it means the mental process of separating qualities that are apart from objects themselves, such as the durability of cricket balls and London buses, but the term is extended to ideas that are never concrete, such as the concept of eternity. The history of psychology includes arguments between those who have believed that most thinking is based on imagery (reincarnations in the mind of sensory experiences) and those who have (the more sensibly in my view) recognised that most thought is imageless.[1]—IAN OSWALD, professor, psychiatry department, Edinburgh.

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