the neurosurgical community by way of a comprehensive literature review.

As evidenced by Dr. Vertosick’s response, many neurosurgeons are slow to open their minds to new advances in technology, in contrast to some of our colleagues such as cardiologists and radiologists. Many neurosurgeons in the past thought introduction of the operating microscope into the practice was useless and unnecessary. They emphatically argued that with their experience they could easily and safely remove a meningioma digitally, in the manner that they had previously been taught. Why introduce expensive technology into the clinical setting, Dr. Vertosick asks? In reality every hospital has an arthroscope unit and the total cost of the instruments necessary to perform this operation is approximately $580. I would hardly call this “quite costly” technology. As a matter of fact, all of the instruments are nondisposable except for the surgical blade.

It has been my experience that patients do care about postoperative pain and discomfort and that is, perhaps, because I bother to ask them about it. I do believe that pain and discomfort should be taken into consideration when choosing between operations that have similar end results. I listen to patients and the most dramatic responses have come from those who have had one hand operated on in the open fashion and the other hand endoscopically. They categorically state that they consider them to almost two different operations. Perhaps, as Dr. Vertosick states, return to work is determined by the surgeon. However, if both operations have similar results, are there not, perhaps, patients being unnecessarily kept from working too long by surgeons performing open procedures? As stated in our article, “There is no need to change from a minimally open technique, if it has provided the surgeon with excellent results.” The overall goal of the manuscript was not to convert but inform.

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Well-Described Anatomy

TO THE EDITOR: What a wealth of anatomical illustrations in the October 1997 Journal of Neurosurgery! I particularly wish to congratulate Drs. Sen and Hague (Sen C, Hague K: Meningiomas involving the cavernous sinus: histological factors affecting the degree of resection. J Neurosurg 87:535–543, October, 1997) on their cross section through the pituitary in which they clearly show the multiple thin-walled veins, especially on the right side, with adjacent adipose tissue in the extradural compartment commonly called the “cavernous sinus.” I know only too well how difficult it is to obtain such a section with the vein walls intact as they have done.

I was also pleased to see the accurate labeling in the article by Wen, et al. (Wen HT, Rhoton AL Jr, Katsuma T, et al: Microsurgical anatomy of the transcondylar, supracondylar, and paracondylar extensions of the far-lateral approach. J Neurosurg 87:555–585, October, 1997).

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Middle Fossa and Hearing Preservation

TO THE EDITOR: I was pleased to see the article by Irving and colleagues (Irving RM, Jackler RK, Pitts LH: Hearing preservation in patients undergoing vestibular schwannoma surgery: comparison of middle fossa and retrosigmoid approaches. J Neurosurg 88:840–845, May, 1998). This report confirms our practice for the last 5 to 10 years and our strong impression that the middle fossa approach is much more likely to preserve hearing than the retrosigmoid (suboccipital) approach. We have long since totally abandoned the retrosigmoid operation.

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Medullary Compression and Hypertension

TO THE EDITOR: We read with great interest the article by CoLón, et al. (CoLón GP, Quint DJ, Dickinson LD, et al: Magnetic resonance evaluation of ventrolateral medullary compression in essential hypertension. J Neurosurg 88:226–231, February, 1998) describing the use of fine-section magnetic resonance (MR) imaging to investigate a subject of contention: the association of neurovascular compression of the ventrolateral medulla and essential hypertension. Four reviewers blinded to the patients’ status prospectively examined MR images obtained in 30 patients with essential hypertension and 45 control patients. They found no difference between the two groups in terms of vascular contact or compression of the left or right ventrolateral medulla. The authors do not challenge the concept of vascular compression but conclude that MR imaging may not be suitable as a screening tool to identify hypertensive patients who would benefit from vascular decompression.

Using a T2-weighted fast spin–echo MR sequence with interleaved 3-mm sections, we have examined more than 200 normotensive patients who were referred for brainstem imaging. In the first 200 patients who were reviewed, MR imaging demonstrated either vascular contact or compression of the ventrolateral medulla at the root entry zone of the left glossohypoglossal and vagus nerves in 36% (unpublished data). The same incidence of compression was observed on the right side. These figures are similar to those of CoLón, et al., and Watters, et al., but not one of these studies involves more than 20 control volunteers.

The work of CoLón, et al., also highlights another critical problem with MR assessment. Unfortunately, a kappa statistical analysis of interobserver variability was not performed; however, a wide range of values was clearly encountered on certain limbs of the study, with estimates of vascular contact/compression varying from 17 to 52% among the four observers. Interpretation of even the most optimal image is frequently difficult and this degree of interobserver variability will not surprise those who have been involved in projects of this kind. The significance of this problem should not be underestimated.

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Protagonists of neurogenic hypertension will still quote higher rates of medullary compression in hypertensive patients (76–83%)\(^4\), and will probably continue to criticize the MR technique and selection bias of this and other studies that do not demonstrate significant differences between hypertensive and control patients. It is increasingly clear, however, that vascular compression of the ventrolateral medulla cannot be reproducibly evaluated by MR imaging, and when this finding is present it can have no diagnostic or therapeutic impact because the condition is so prevalent in normal individuals.

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References

Persistent Vegetative State

To THE EDITOR: We read with interest the article by Kampfl and colleagues (Kampfl A, Franz G, Aichner F, et al: The persistent vegetative state after closed head injury: clinical and magnetic imaging findings in 42 patients. J Neurosurg 88:809–816, May, 1998), in which they report magnetic resonance (MR) findings in patients who are in a persistent vegetative state. They have carefully analyzed MR images obtained in 42 patients 42 to 56 days after head injury.

We believe that it is very important to predict the outcome of traumatic brain injury in patients who are initially in a coma state. Previously, we performed a small prospective MR study in acute-phase brain-injured patients. We used a cardiorespiratory monitoring system for the MR imaging unit.\(^3\)

In our series,\(^4\) the initial Glasgow Coma Scale (GCS) scores were 7.3 ± 2.1 in the group with favorable clinical outcome (Glasgow Outcome Scale [GOS], better than moderate disability), and 9.6 ± 3.4 in the poor outcome group (GOS, below moderate disability). From the initial GCS, we could not predict whether an individual traumatic brain injury patient would recover from an initial coma. However, on initial MR images obtained within a few days of a trauma, the favorable clinical outcome group showed no lesions or unilateral brainstem lesions in 87.5% (seven of eight patients) of the cases, whereas diffuse or bilateral lesions were seen in only 13.5% (one patient) in this group. Contrary to these findings, the poor outcome group showed exclusively diffuse or bilateral brainstem injury in the acute phase (five cases). This difference is statistically significant (p < 0.01, chi-square test). The auditory brainstem response (ABR) findings disclosed normal ABR in the favorable outcome group, even in those patients in whom MR images demonstrated brainstem injury. On the other hand, no ABR response was demonstrated in any case in the poor outcome group. The ABR remained normal in a majority of the favorable outcome group, irrespective of the presence or absence of brainstem injury. Therefore, it was not possible to evaluate from the ABR alone whether a patient suffered a brainstem injury. Magnetic resonance images provided a more sensitive and informative method of evaluating the status of these patients.

From our results, we believe that bilateral diffuse lesions may have existed in the acute phase of the injury in persistently vegetative patients. Based on our own experience and that of others, it seems possible that the pathological findings seen on T\(_2\)-weighted MR images may disappear after weeks or months, leaving no findings on T\(_1\)-weighted MR images.\(^1,2\) Hence, at the time of their investigation, the interpretation made by Kampfl, et al., may have underestimated some of the pathological findings in the series, in which there were 19 patients with marked brainstem atrophy. Such findings may indicate the sequelae of the brainstem injuries observed during the chronic stage.

Considering our findings and those of Kampfl, et al., we would like to ask Kampfl and colleagues if they examined their patients in the more acute phase and whether they saw chronological changes in the MR findings. In their series, 47% of the patients had bilateral lesions in the tegmentum and 67% in ventral portions of the midbrain. In the report, it was not mentioned whether brainstem atrophy was correlated with these lesions. In our series MR imaging demonstrated large dorsal midbrain lesions in the acute phase in a majority of patients in the poor prognosis group. This might agree with the results reported in the Kampfl series, in which dorsolateral rostral brainstem lesions (in 74% of the patients) were described as a common feature of patients in vegetative states.

We would like to stress the importance of performing MR imaging as soon as possible after a traumatic injury, even if aided by MR imaging–compatible cardiorespiratory monitoring,\(^5\) which would allow for the accurate evaluation of brainstem injuries.

We congratulate the authors for their careful observations, which describe MR imaging in patients with head injury who are in a persistent vegetative state.

References