

Board for approximately 30 years. I agree also with the writer's mention that Fulton was most generous in his recognition of the work and ideas of others, and he would not for a moment have countenanced overlooking the importance of Asenjo's idea. I think it is also true that considering the tribulations of the war years, it is likely that the idea of a journal of neurosurgery would have been long delayed had it not been for the energetic and enthusiastic promotion of the idea by Fulton.

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1. Davey LM: John F. Fulton, M.D. and the founding of the *Journal of Neurosurgery*. *J Neurosurg* 80:584-587, 1994.

Venous Air Embolism in Sitting and Supine Patients Undergoing Vestibular Schwannoma Resection

To the Editor: Duke et al. presented a timely article on a controversial issue (1). In 1987, in his thesis, Smelt (2) reported serious hemodynamic complications occurring in patients who were operated on while in the sitting position for neurosurgical procedures, compromising cerebral perfusion. In addition to these findings, alarming reports from one department about two consecutive cases of postoperative quadriplegia in young patients led to the abandonment of this operative position in most neurosurgical departments in The Netherlands.

In our department, neurosurgical procedures have been performed with the patients in the sitting position since the closing of the 1970s, averaging 25 operations per year. To evaluate the risks of the procedure in our department, we reviewed the charts of 91 patients who were operated on between 1989 and 1994 and subsequently studied 17 patients prospectively. The incidence of venous air embolism, measured using precordial Doppler monitoring and capnography, was recorded. Postoperative neurological, cardiac, and respiratory statuses were established, and neurological outcomes after 3 months were determined. The prospective study was focused on the incidence of hemodynamic changes caused by the shift in

position and the occurrence of venous air embolism. In addition to routine precordial Doppler monitoring and capnography, a pulmonary artery catheter was inserted. Central venous pressure and pulmonary artery pressure were continuously recorded. Cardiac output was measured, and vascular resistance was calculated. Patients received 0.1 mg/kg diazepam premedication. The legs were bandaged. After intravenous preloading with 10 ml/kg Ringer's lactate, anesthesia was induced using etomidate, fentanyl, and pancuronium and was maintained using oxygen, nitrous oxide, fentanyl, and isoflurane 0.4% end-tidal. If a change in the Doppler signal was accompanied by a decrease in end-tidal CO₂, air embolism was assumed. This was reported to the surgeon, who covered the incision with wet gauze. Nitrous oxide was discontinued, both jugular veins were compressed, and air was aspirated from the central venous catheter. An attempt was made to localize the entry point of the air into the venous system and to seal it. After recovery of end-tidal CO₂, the operation was continued, often without finding a clear entry point.

A total of 108 patients were studied. The mean patient age was 49 years (range, 3-74 yr). In the majority of cases, the diagnosis was a neoplasm in the posterior fossa. The operating time varied from 1 to 9 hours (mean, 182 min). Heart rate, central venous and pulmonary artery pressure, and calculated hemodynamic parameters dropped after putting the patient in the sitting position. However, these changes did not reach statistical significance. In each of 11 patients, there was an acute drop of more than 20 mm Hg in systolic blood pressure after positioning. This could easily be managed by increasing the rate of the intravenous infusion or by the intravenous administration of 5 to 10 mg of ephedrine. Venous air embolism was observed in a total of 23 instances in 20 patients. An acute increase of the pulmonary artery pressure proved to be a sensitive sign of the occurrence of venous air embolism. In only one case was the operation interrupted and continued after repositioning the patient in the prone position. None of these patients suffered neurological sequelae. There

were complications in 23 patients, none of which related to positioning or the occurrence of venous air embolism.

We conclude that posterior fossa operations performed with the patients in the sitting position do not lead to serious hemodynamic changes. Venous air embolisms occur but seem to have no serious consequences. Continuous monitoring of the pulmonary artery pressure can serve as an alternative monitoring for venous air embolism. In experienced hands, with proper patient selection and indication, operating with the patient in the sitting position can offer many advantages at an acceptable risk. We fully agree with the authors that the decision regarding which position to use is dictated by preference of the surgical team. We express our hopes that the sitting position will reclaim the credit it deserves. The article by Duke et al. is a significant contribution to the ongoing discussion.

262

1. Duke D. MJ: Venous air embolism in patients undergoing vestibular schwannoma resection. *Neurosurgery* 42:1282-1287, 1998.
2. Smelt WLH: Anesthetie bij patiënten in zittende positie. Amsterdam, Free University of Amsterdam, 1987 (dissertation).

Lymphocytic and Granulomatous Hypophysitis: Experience with Nine Cases

To the Editor: We read with great interest the article by Honegger et al. (2). The authors present nine cases with hypophysitis, including two cases of granulomatous hypophysitis. Interestingly, one patient, a 16-year-old female, had granulomatous hypophysitis and related aseptic meningitis. Once the inflammatory pituitary lesion had been removed by surgery, the symptoms and signs of meningitis ceased, providing strong evidence that the meningitis was secondary to the granulomatous hypophysitis. This is the second report of granulomatous hypophysitis and aseptic meningitis; the first was published in 1992 (3). We report herein a third analogous case, which further emphasizes the possibility

