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# Re: various irrigation fluids affect postoperative brain edema and cellular damage during experimental neurosurgery in rats

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## Response to Letter to the Editor

I appreciate the comments of Dr Turgut. He makes an excellent point that some literature supports the theory of vasospasm as part of the etiology of cerebellar mutism. He also points out that hydrocephalus and sensitivity of the Purkinje cells within the cerebellum are the root cause of cerebellar mutism. I believe that there is certainly not enough data available at this point to definitively determine the true cause, but it is through intellectual discussions such as these and opportunities such as through *Surgical Neurology* that the scientific knowledge will progress. Thus, it is hoped that in the future, we will be able to answer this and other important questions.

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### Re: Various irrigation fluids affect postoperative brain edema and cellular damage during experimental neurosurgery in rats (Doi et al. *Surg Neurol* 2006;66:565-72)

Doi et al have compared the effects of various irrigation fluids used during neurosurgical procedures on rat neural cells. The possible harmful effects of normal saline and other irrigation fluids in clinical use and the relative safety of artificial cerebrospinal fluid (CSF) is not a new topic. It has been an issue of debate in neurosurgery on and off for the past 50 years [1,3,5]. The claim made by Doi et al that their study is the first to investigate the influence of irrigation fluid on incisional injury of the brain in an animal model is quite right. No one before Doi et al has studied the effect of irrigation fluids under such experimental conditions, which are close to in vivo. But still there are a number of issues regarding the study that need to be pointed out:

Firstly, because this artificial CSF (ACF-95) that they have used in their experiments and have concluded to be the most effective irrigation fluid among the tested solutions is a product of their own Otsuka Pharmaceutical Factory, there must be a mention of financial conflict of interest [4]. It is a prerequisite of biomedical research to include an explanatory statement that discloses any potential conflict of interest especially if you are investigating the product of a company for which you are working. In the past, there have

been issues when investigators were accused of having fabricated or falsified research data on therapeutic products in which they had substantial financial interests [2]. *Surgical Neurology* is a journal of international repute addressing a wider audience in neurosurgery worldwide. Publication of an article containing results that can raise the sensitive issue of financial conflict of interest is a matter of serious concern.

Secondly, how far these results are applicable on human neural tissue that is actually exposed to these solutions during neurosurgical procedures is a matter of debate.

Our third concern is that the artificial CSF that Doi et al have advocated to be the best is not commercially available in third world countries such as Pakistan; and if we try to get it from somewhere outside Pakistan, it will not be cost-effective. So, despite all the concerns, in third world countries normal saline remains the irrigation fluid of choice; and the issues regarding its safety remain of theoretical interest only.

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## Response

We have read the “Letter to the Editor” regarding our article and would like to make it clear to the editor about our study. As commented in the letter by Kazim et al, the artificial cerebrospinal fluid used in our study was developed by our colleagues, and it was so described in the article. We clearly identified our affiliation with Otsuka Pharmaceutical Factory, Inc, and our investigation of the various irrigation fluids.