Bilateral Cervical Plexus Block in Simultaneous Cochlear Implants: An Intervention We Won’t Adopt

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ABSTRACT

BSiCI is a safe procedure that carries no demonstrable added morbidity compared to unilateral or bilateral sequential cochlear implantation.1 Our previous experience with CI identified a higher postoperative opiate consumption in kids whom underwent BSiCI compared to ones receiving unilateral implantation and an intimation arose that this possibly reflected increased pain perception in this group.1

In an effort to decrease the discomfort related to the implant site, and possibly decrease the postoperative opiate requirements, we recently adopted the use of intraoperative bilateral superficial cervical plexus block (CB) to all cases undergoing cochlear implantation.

Soon after the CB implementation, a number of cases of postoperative fever were noted within the first 24 postoperative hours. This resulted in a prolonged hospital stay and delayed discharge. While a number of potential causes were considered, no definitive cause for the fever was identified in any of the cases.

RESULTS

Cross sectional analysis revealed a significant association between CB and early postoperative fever (Fisher’s Exact test, p = 0.005). The blocked group was 5 times more likely to develop fever than the no-block group (Relative risk: 5.33, 95% CI = 2.41-11.78). The association was also present when the fever cutoff temperature was brought down to >= 37.8 (p=0.007).

DISCUSSION

Given our standardized protocols for general anesthesia, local anesthetic injection, and postoperative care, in addition to the fact that fevers in all of the cases developed within the first 24 hours postoperatively, it is hypothesized that fever in our series developed secondary to atelectasis. This was not confirmed by chest x-rays, it was rather a diagnosis of exclusion. Two mechanisms are postulated:

1) After superficial injection, the local anesthetic might have leaked through the deep layer of the deep cervical fascia, therefore blocking the phrenic nerve. This in turn could lead to a diaphragmatic paresis and atelectasis.

2) Alternatively, the local anesthetic might have been unintentionally injected into the deep cervical fascia, leading similarly to phrenic nerve paralysis.

Phrenic nerve blockade invariably develops with the various deep cervical blocks, and this is mainly due to the shared nerve roots between the two.2 The cervical plexus arises from the anterior rami of C2-4 while the phrenic nerve arises from C3-5.

Methylene blue injected into cadaver’s superficial cervical fascia has been found to leak through the deep cervical fascia and surround both the cervical nerve roots and phrenic nerve.3

CONCLUSIONS

Bilateral CB increased the risk of postoperative fever in pediatric patients undergoing BSiCI. CB did not reduce the requirements of postoperative pain medications. On the contrary, CB was associated with a longer hospital admission. It is possible that the CB was blocking the phrenic nerve leading to atelectasis and early postoperative fever.

REFERENCES