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RESEARCH ARTICLE

Variations in Sacral Hiatus : Important Reason of Failure Of Caudal Epidurals

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Abstract

Caudal epidurals are offered by clinicians for variety of conditions and are a very frequently used procedure with highly unpredictable results. Since it involves access to sacral hiatus, 50 dry human sacra were covered with clay and two experienced clinician attempted passage of spinal needle and it was found that the needle has missed the hiatus in 30 % of the instances. We studied the anatomical reasons and found that sacral hiatus to be highly inconsistent structure with no two hiatus to be alike in terms of length location of its base and width. Anatomic reasons for the failure and highly variable anatomical features need to be considered before undertaking such procedures.

INTRODUCTION

Caudal epidurals which are administered very frequently by the clinician for low back ache, radicular pain and to address symptoms of lumbar canal stenosis. However results of administration of caudal epidurals are neither uniform nor predictive with many clinicians reporting high failure rate (**Sekiguchi M *et al* 2004, Pal DR *et al*, 2012)** . The variations in the shape of sacral hiatus is one of the important though less acknowledged reason for failure of the procedure (**Senoglu N *et al* 2004)**

Material and Methods:

Fifty sacra were covered with clay wrapped in a cloth and two clinicians regularly administering caudal analgesia with at least five years of experience were asked to negotiate the sacral hiatus without fluoroscopy with a 20 gauze spinal needle. Needle placement was checked by lifting the clay. Later on the morphology of all the sacra was studied in terms of size and location of sacral hiatus.

Results: Out of the 100 chances it was found that in 30 % of cases the needle has not negotiated hiatus. Out of these 30 chances, in 20 (10%) instances the needle was short of hiatus and in 20 (20%) the needle has gone dorsally. The sacral hiatus were studied for its length. The length of the sacral hiatus ranged between 0.6cm to 5 cm. Complete absence of dorsal wall of sacral canal was observed in 1(2%) sacrum and absence of sacral hiatus was observed 1(2%) specimen. The needle has missed the hiatual opening in all the 7 (14 %) sacra with sacral length more than 3.5 cm.

Sacral hiatus was in 3 sacra (6 %) at the level of third sacral vertebra. In 16 (32%) it was at the level of 4th sacral vertebra and in 28 (56 %) sacra it was at the level of fifth sacral vertebra. In 1 (2%) sacrum the sacral hiatus was absent. In 2 (4%) sacra there was agenesis of the dorsal wall of the sacrum. The measurements of transverse width of base of the sacral hiatus ranged from 0.5 to 2.3 cm. The needle has not traversed the sacral hiatus in 6 sacra with transverse diameter less than .8 cm. The failure was highest in the sacra having longer hiatus.

Discussion:

Our observations are consistent with other authors (**Nagar SK *et al.* 2004)** ,(**Patel Z K *et al.* 2004), (Kumar V *et al.* 1992), Seema, Singh M, Mahajan A.(2013)**who also reported inconsistency of the length of the sacral hiatus, base of hiatus and transverse dimensions of hiatus. With highly variable morphometry of sacral hiatus, it is highly unreliable to negotiate the sacral hiatus blindly owing to the anatomical variations as no two sacral hiatus were found to be exactly similar. Failure of intended caudal epidural injections can be very well attributed to the anatomical variations and clinicians must take into account the variability in the features of sacral hiatus before undertaking the procedure.

Conclusion:

Caudal epidural is a very frequently offered procedure and its results are not predictive. Variation in sacral hiatus anatomy is an important cause for their failure and clinician must be aware of this inconsistency.

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