



Evaluation of Dacrosclintigraphy and Dacrocystography in Assessment of Nasolacrimal Drainage Apparatus in Patients of Chronic Epiphora

KEYWORDS

Epiphora, Dacrocystography, Dacrosclintigraphy, Dacrocystorhinostomy.

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ABSTRACT

Aim : To study the effectiveness of the two procedures Dacrocystography and Dacrosclintigraphy for diagnosing of blockage of Nasolacrimal Duct system.

Methods and Material : The prospective study included 33 patients with 40 eyes and was carried out for 1 year at our tertiary care teaching hospital. Patient with unilateral/bilateral epiphora were selected for both the tests after screening them for nasolacrimal duct system block by sac syringing. Other causes of epiphora were excluded. Nuclear scintigraphy using technetium 99 DTPA was performed followed by dacrocystography using water soluble dye in all patients.

Results: Scintigraphy showed 92.68% positive results and 7.31 % negative (false negative) for the block and dacrocystography gave 78.04% positive and 21.95 % negative(false negative).

Conclusion: Nuclear scintigraphy can be used effectively as a valuable diagnostic tool for diagnosing functional and mechanical obstruction in patients before doing a Dacrocystorhinostomy and can be used as first line of investigation for diagnosis.

Introduction:

Tearing process was first studied with radioisotopes in 1973. Epiphora is the presenting complaint of patients with blockage of nasolacrimal duct system. Both ophthalmologists and otorhinolaryngologists deal with the diagnosis and treatment of nasolacrimal duct block. The surgical intervention is a Dacrocystorhinostomy in case of nasolacrimal duct block, done endoscopically by an Otorhinolaryngologist and externally by an ophthalmologist.

There are various tests performed to diagnose the level of nasolacrimal duct block such as fluorescein dye test, dacrocystography, nuclear lacrimal scintigraphy, CTscan and MRI. It is not necessary to conduct the whole battery of tests to diagnose the level of Nasolacrimal duct system block. Clinically reflux from same punctum or opposite punctum on sac syringing indicates blockage of nasolacrimal duct system. Dacrocystography gives anatomical orientation of the nasolacrimal duct system whereas scintigraphy shows the 'functional integrity' of the nasolacrimal duct system.

In our study we have attempted to study the effectivity of the following procedures sac syringing, dacrocystography and dacrosclintigraphy in diagnosing correctly the condition of nasolacrimal duct blockage and thus treat patient effectively.

Material and methods:

Ours was a prospective study of one year involving 33 patients who attended the ENT OPD in a tertiary care hospital with the complaint of watering of eyes (unilateral / bilateral). Inclusion criteria: Patients with epiphora with normal lid position and no other ocular disease were included in the study. The study also included patients with congenital dacrocystitis. Patient with failure of dacrocystorhinostomy surgery were also included. Exclusion criteria: Patient with ectropion, other ocular conditions resulting in epiphora and pregnant females were excluded.

We have used sac syringing as the screening test for our patients with epiphora. Our technique of sac syringing involved instilling of topical local anaesthetics in the lower fornix before cannulating the lower punctum. The punctal opening was dilated with lacrimal dilator. A blunt needle of no. 26 and

2cc syringe with normal saline was used for syringing. Approximately 1cc of saline was irrigated in the lacrimal system. The test was taken as positive when the saline regurgitated after a delay from the opposite punctum. These patients were subjected to the diagnostic test of dacrocystography and dacrosclintigraphy. The patient first underwent dacrosclintigraphy and then dacrocystography on the next day.

Dacrosclintigraphy: Dacrosclintigraphy was performed with patient in supine position. Technetium 99 DTPA, 0.5 millicurie, is instilled into the lower fornix (conjunctival sac) of the patient. Seimens single headed Gamma camera was used for imaging. Dynamic images were taken for 20 mins /5 secs frame. Delayed images were taken after 1 hour and then after 2 hrs, if it showed a block.

Dacrocystography: Dacrocystography was performed the following day. Patient lay in supine position. Topical anaesthesia was instilled before the procedure. The punctum was dilated with the punctal dilator (if required) and then the punctum is cannulated with 26 no (½ inch) blunt needle to which a 2cc syringe containing 1 ml of water soluble contrast medium Diatriazoate Meglumine is attached. The dye is slowly given without any pressure. The images are taken in antero-posterior projection. Digital subtraction technique was used as it was available at our centre. Immediate films were shot and if the dacrocystography showed a block then delayed films were shot after an hour.

Results:

Thirty three patients (with 40 lacrimal systems) were evaluated by both techniques. The age of patients ranged from 16 – 69 years. Out of 33 patients, 22 were females and 11 were males. Six patients included in the study were previously operated for dacrocystitis (external / endoscopic Dacrocystorhinostomy) and had recurrence of symptoms. 1 patient had developed dacrocystitis secondary to road traffic accident due to fracture of facial fracture including lacrimal bone. There were 3 patients with sac abscess. Patients with sac abscesses were exposed to dacrocystography after resolution of abscess.

Scintigraphy gave 92.68 % positive and 7.31 % negative

results.[Fig 1]. Dacrocystography gave 78.04 % positive and 21.95 % negative results [Fig 2]. The surgical findings were taken as gold standard for confirming the diagnosis of nasolacrimal system block. In all above cases the block was confirmed during surgery and post surgical improvement in symptoms. Scintigraphy was inconclusive in 1 patient and showed no sac in another patient. In the above 2 patients dacrocystography showed block of nasolacrimal system.

Dacrocystography showed 8 patients with normal lacrimal system, whereas scintigraphy showed block of the nasolacrimal system in these patients.

The surgical findings confirmed the presence of nasolacrimal duct block. The combination of both the tests gave 100% result as confirmed on surgical finding.

Discussion :

Epiphora results from mechanical or functional obstruction of nasolacrimal duct system . The treatment for any form of Saccal or postsaccal obstruction is dacrocystorhinostomy either by external approach or endoscopic approach.

Both dacrocystography or dacroscentigraphy have been used as individual investigation or together for knowing the level of obstruction. An ophthalmologist can operate on pre-saccal, saccal and postsaccal block effectively but for an otolaryngologist it is important to know the exact level of block. There is a study suggesting that most of the surgeons do not conduct the test before taking the patient for surgery¹. We conducted the study to assess how much these investigations really help the surgeon and whether both investigations are really needed.

Sac syringing was used as a screening test. This test itself can be used for diagnosing but at times it becomes difficult to diagnose presaccal (canalicular) block so it requires confirmation by Scintigraphy and Dacrocystography.

We have analysed both tests and taken surgical finding as the gold standard. At most places Dacrocystography is done as first choice investigation because of its easy availability.

Rossondo and colleagues² introduced the lacrimal scintigraphy in 1972. Our study confirms that scintigraphy gives more positive results as compared to dacrocystography. Other studies have showed similar results that scintigraphy is more sensitive in detecting functional nasolacrimal duct block.^{3,4,5}

Scintigraphy offers the advantage of being a non invasive procedure therefore it could be performed on all the patients including lacrimal sac abscesses whereas we have to wait for the abscess to resolve before performing dacrocystography. It is also difficult to perform dacrocystography test on children. Dacrocystography gives anatomical specifications of sac and the level of block⁶. In our study all the patients had no other disease of the sac other than the block. Scintigraphy images do not give any anatomical details of the sac.

Canalicular block are difficult to diagnose on dacrocystography as it is difficult to cannulate the punctum if the block is proximally present. In these conditions Nuclear scintigraphy gives a more sensitive result as suggested by other studies⁵.

Conclusion :

Nuclear scintigraphy can be used as a valuable diagnostic tool for diagnosing functional and mechanical obstruction and can be used as first line of investigation for diagnosis. Though scintigraphy is a reliable test especially for functional block , it is not 100% sensitive. Dacrocystography can be utilized if sac syringing and scintigraphy gives ambiguous results to come to the final diagnosis. Thus we recommend that Dacrocystography should be done is pre-operative assessment of patients for DCR for assuring better clinical diagnosis and surgical outcomes.

Summary:

1. Dacrocystography is a non invasive and cost effective procedure for assessing the naso lacrimal system,
2. Dacrocystography assesses the functional obstruction of nasolacrimal duct,
3. Dacrocystography can be done in children ,
4. Dacrocystography gives the morphological information of the nasolacrimal duct.

Fig 1 : Dacroscentigraphy showing Nasolacrimal duct block on Right side.

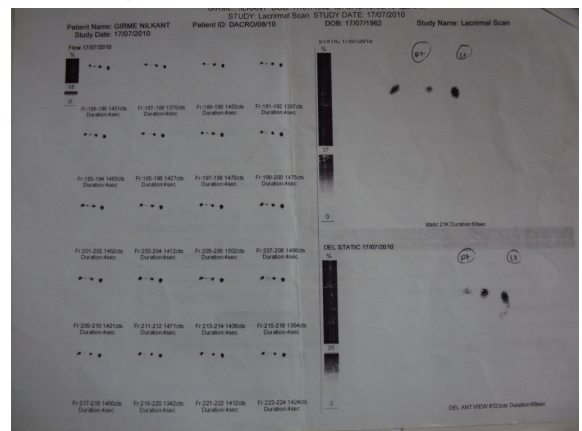


Fig 2 : Dacrocystography showing Left Nasolacrimal duct block



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