Epiphora is a common ophthalmologic problem due to stricture of lacrimal passage. There are two imaging tools in the evaluation of epiphora: contrast dacryocystography (CD) and lacrimal dacryoscintigraphy (LDS). Although CD can provide detailed anatomic information of lacrimal passage, it is less helpful in the evaluation of functional status. Therefore, some discordance between the results of CD and the clinical features may occur. However, LDS can provide functional information, though anatomic resolution is not so satisfactory.

The purposes of this exhibition were (1) to evaluate the concordance rate between clinical features and the imaging findings and (2) to calculate positive/negative predictive values of both diagnostic modalities in patients with epiphora.

We retrospectively reviewed CD and LDS of 50 patients (M:F=21:29). Therefore, one hundred eyes were included in this study. Among one hundred eyes, 75 eyes were epiphoric and 25 were normal.

We assessed the concordance rate between clinical features and findings of CD and LDS. The positive and negative predictive values were also calculated. And we also evaluated the ability to localize obstruction sites.
The concordance rate between epiphora and imaging findings was 60% for CD and 85% for LDS. The positive and negative predictive value was 92%, 41% for CD and 93%, 65% for LDS (Table 1). CD was superior to LDS in the localization of obstruction site (Fig.1, 2). Symptom correlation with imaging findings was more excellent in LDS (Fig.3, 4).

**TABLE 1. Correlation of Epiphora with CD and LDS**

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<th>CD</th>
<th>LDS</th>
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<tr>
<td>Concordance rate</td>
<td>60%(45/75)</td>
<td>85%(52/75)</td>
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<tr>
<td>Positive predictive value</td>
<td>92%(69/75)</td>
<td>93%(70/75)</td>
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<tr>
<td>Negative predictive value</td>
<td>41%(10/25)</td>
<td>65%(16/25)</td>
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**Fig.1.** A 53-year-old woman with epiphora in left eye. CD is superior to LDS in anatomic localization.
A. CD shows complete obstruction at the left proximal nasolacrimal duct.
B. LDS shows complete obstruction near left common canaliculus level at 20 min. delayed image.

**Fig.2.** A 62-year-old woman with epiphora in both eyes. CD is superior to LDS in anatomic localization.
A. CD shows complete obstruction at the right common canaliculus and left canicular junction between lacrimal sac and nasolacrimal duct.
B. LDS shows complete obstruction near the both lacrimal sac level at 30 min. delayed image.

**Fig.3.** A 55-year-old woman with epiphora in both eyes. Symptom is better correlated with LDS than CD.
A. CD reveals good passage of contrast medium in both nasolacrimal duct.
B. LDS shows complete obstruction at both nasolacrimal ducts at 20 min. delayed image.

**Fig.4.** A 64-year-old woman with epiphora of left eye. Symptom is better correlated with LDS than CD.
A. CD reveals good passage of contrast without obstruction in both nasolacrimal ducts.
B. LDS demonstrates complete obstruction at the level of lacrimal sac at 1 hr. delayed image.
DISCUSSION

In our study, CD revealed higher false negative rate probably due to forceful injection of contrast materials resulting transient recanalization of nasolacrimal duct. In comparison with CD, LDS shows natural status of lacrimal pathway although it has less satisfactory anatomic resolution than CD. Therefore, high symptom correlation of LDS was expected results. LDS is also advantageous because of little complications resulting from manual injection and trivial radiation exposure.

CONCLUSION

CD is more superior to LDS in the precise anatomic localization of the obstruction site. LDS shows higher clinical correlation and negative predictive value in comparison with CD. LDS seems to be useful as an initial diagnostic study in patients with epiphora, and subsequent CD is necessary before intervention of the nasolacrimal duct.