

XII CONGRESS of ISD&DE

05-07

October 2017

Athens GREECE

Zappeion Megaron

International
Society
of Dacryology
& Dry Eye

DAY 1 THURSDAY, October 5th 2017

10:00-11:45 SESSION I: Clinical and Surgical Advances in Dry Eye Syndrome

Chair: Scheffer Tseng

1. Autologous serum eyedrops for severe Corneal Epitheliopathy
Mary Goto

ABSTRACT NOT AVAILABLE

DAY 1 THURSDAY, October 5th 2017

10:00-11:45 SESSION I: Clinical and Surgical Advances in Dry Eye Syndrome

Chair: Scheffer Tsenq

2. NON-INVASIVE EVALUATION IN DRY EYE PATIENTS: CORRELATION BETWEEN TEAR OSMOLARITY, TEAR MENISCUS HEIGHT AND NON-INVASIVE TEAR BREAK-UP TIME WITH OTHER TEAR FUNCTION TESTS

Azersara Vural Karakılıç, Arzu Taskiran Comez

AIM: To determine the correlation of non-invasive tests like tear osmolality, tear meniscus height, meibomography and non-invasive tear break-up time (NI-TBUT with conventional tear function tests in dry eye patients.

MATERIALS and METHODS: One hundred and twenty-two eyes of 61 patients over 18 years old who applied to Canakkale Onsekiz Mart University, School of Medicine, Department of Ophthalmology with dry eye complaints or recently diagnosed with dry eye syndrome between April 2016 and September 2016 are included in the study. After general ophthalmological examination including best corrected visual acuity (BCVA), biomicroscopic and ophthalmoscopic examination, non-invasive methods like Ocular Surface Disease Index (OSDI) scoring, tear osmolality, non-invasive tear break time (NI-TBUT) measurement with Scheimpflug topography, meibomography, and measurement of the lower lid meniscus height by Optical Coherence Tomography (OCT) were performed. After non-invasive tests, conventional tear function tests like Schirmer test, tear break time (TBUT), cornea and conjunctiva staining were applied respectively.

RESULTS: Positive correlation was found between non-invasive tear break time and tear break time ($p < 0,01$ spearman's $\rho: 0,473$). Invasive tear-break up time was found to be positively correlated with Schirmer test and negatively correlated with corneoconjunctival staining. ($p < 0,01$ spearman's $\rho: 0,393$, $\rho: -0,418$). Schirmer test results were correlated positively with tear meniscus height, and negatively correlated with OSDI scoring and corneoconjunctival staining. ($p < 0,05$ spearman's $\rho: 0,181$, $p < 0,05$ spearman's $\rho: -0,214$, $p < 0,01$ spearman's $\rho: -0,394$). Tear osmolality test results and meibomography did not correlated with any test.

CONCLUSION: NI-TBUT is found to be correlated with conventional invasive tear break time test and it is thought that it can be used instead of invasive tear break time in appropriate patients. Tear osmolality measurement and meibomography results were not significant in diagnosis of early stage dry eye patients. Although tear meniscus height may be preferred for being a non-invasive test, there is no consensus on its cut-off value between normal and dry eye patients in the literature which limits its importance in diagnosis but in the follow-up of treatment effectiveness.

DAY 1 THURSDAY, October 5th 2017

10:00-11:45 SESSION I: Clinical and Surgical Advances in Dry Eye Syndrome
Chair: Scheffer Tseng

3. EFFICIENCY OF 0.01% DEXAMETHASONE SOLUTION IN POLYVINYLPIRROLIDONE ACQUEOUS SOLUTION IN TREATING DRY EYE DISEASE OF DIFFERENT ETIOLOGY.

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¹*Saint Petersburg State Medical Pediatric University, St. Petersburg, Russia.*

²*The Mariinsky Hospital, St. Petersburg, Russia.*

Background. We developed a drug containing 0.01% dexamethasone phosphate in combinations with 6% polyvinylpyrrolidone and 1.5-5.5% dextrose solution.

Aim. To study the impact of the developed medication on the inflammatory process dynamics in the tissues of the eye surface.

Materials and methods. The material of the study was based on the results of the examination and treatment of 25 volunteers (50 eyes) with dry eye disease of different etiology. Prior to the therapy and on day 28 of the study the following parameters were assessed, lower tear meniscus index, precorneal tear film production, stability and osmolarity, staining of eye surface epithelium with vital solutions. Cytokines content was defined in the tear fluid and blood plasma with ELISA method: IL-1 β , IL-2, IL-4, IL-6, IL-8, IL-10, IL-17A, IL-1Ra, TNF- α , INF- α , INF- γ .

Results. By day 28 of the study is observed by the decrease of subjective signs of the eye surface epithelium xerosis and the positive dynamics of the functional parameters: the statistically valid increase of the tear meniscus index, precorneal tear film stability, main and total tear production and decrease of tear film osmolarity were observed. Besides, the staining degree of the ocular surface epithelium with vital solutions decreased. The anti-inflammatory effect is confirmed by the decrease of the levels of a broad range of pro-inflammatory and the increase of anti-inflammatory cytokines both in the tear fluid and blood plasma.

Conclusion. The results of the study performed prove the high clinical efficiency of the developed medication in the therapy of dry eye disease.

DAY 1 THURSDAY, October 5th 2017

10:00-11:45 **SESSION I: Clinical and Surgical Advances in Dry Eye Syndrome**
Chair: Scheffer Tseng

4. A NOVEL TECHNIQUE OF PLASTIC DACRYOCYSTORHINOSTOMY OSTIUM FORMATION IN ENDOSCOPIC DACRYOCYSTORHINOSTOMY: A PRELIMINARY STUDY

Krakhovetskiy N.N., Atkova E.L., Yartsev V.D.

Lacrimal pathology department, Eye Diseases Research Institute, Moscow, RUSSIA

Background. The key aspect of the endoscopic dacrocystorhinostomy (DCR) is nasal and lacrimal mucosal flaps preservation and a mucosa-to-mucosa apposition allowing healing by primary intention and reducing the risk of granuloma formation. We developed a new technique for plastic DCR ostium formation.

Aim. To evaluate the effectiveness of our technique of plastic DCR ostium formation.

Methods. A retrospective review of outcomes in 45 patients (48 cases) who underwent endoscopic DCR procedure. The surgical technique included creation of two trapezium-shaped nasal mucosal flaps. The anterior one was lower edge-based, the posterior one was posterior edge-based. It was then partially cut up to 3/4 of height from the bottom upwards, leaving the pedicle at the upper edge, and turned to the upper edge of osteotomy. This allowed covering the upper edge of osteotomy, which was exposed due to anterior mucosal flap contraction. Thus, ostium was formed triangular with all of its three sides covered with nasal mucosa. The follow-up period was 12 months.

Results. The final success was achieved in 95,8%. Postoperative complications included ostium granuloma formation in 4 cases (14,3%) and intranasal synechia formation between the middle turbinate and ostium site in 1 case (3,6%).

Conclusion. According to preliminary study, our technique of plastic DCR ostium formation ensures high success rate of endoscopic DCR.

DAY 1 THURSDAY, October 5th 2017

14:00-15:45 SESSION III: Common Lacrimal Disorders and Surgery
Chairs: Juan Murube, Nikos Trakos

5. INJECTION OF MITOMYCIN-C (MMC) IN ENDOSCOPIC ENDONASAL DACRYOCYSTORHINOSTOMY (EEDCR).

Atkova E.L., Fedorov A.A., Root A.O, Krakhovetskiy N.N., Yartsev V.D., Iartsev S.D.
Scientific Research Institute of Eye Diseases, Moscow
Frumkin Institute of Physical Chemistry and Electrochemistry of the RAS, Moscow

Background. A long-term experience of MMC using in eeDCR exists, but its effectiveness remains controversial.

Aim: to evaluate outcome of modified injection technique of MMC administration in eeDCR.

Materials and methods. Forty-eight patients (48 cases) with primary acquired nasolacrimal duct obliteration underwent eeDCR. We administrated MMC 0.2 mg/ml by injection into nasal and lacrimal sac mucosa. We performed histological study of nasal and lacrimal sac mucous harvested at 2, 5, 7, 14, 21, 28, 60 days after procedures. We performed chemical analyze for the samples of tissue and blood. The follow-up period was 12 month. We evaluated *Munk* score, lacrimal meniscometry data, and epithelization of the osteotomy site.

Results. Histological study revealed abortive mitosis at the 14th day, suppression of collagen formation at the 28th day after the surgery comparing to normal reparation process. Concentration of MMC in tissues samples was $390 \pm 10 \mu\text{g/g}$ immediately after application and $120 \pm 20 \mu\text{g/g}$ in 30 minutes after application, subsequently not detected. We detected no MMC in blood samples. We observed positive clinical outcomes in 97.9 % of cases.

Conclusions. The injection of MMC at the final stage of eeDCR showed to be clinical effective and safe to prevent excessive scar formation due to MMC antifibrotic concentration estimation in tissues.

DAY 1 THURSDAY, October 5th 2017

14:00-15:45 **SESSION III: Common Lacrimal Disorders and Surgery**
Chairs: Juan Murube, Nikos Trakos

6. SIMULTANEOUS ENDOSCOPIC MARSUPIALIZATION OF BILATERAL DACRYOCYSTOCELES - A VIDEO PRESENTATION

Akshay Nair

Background: Dacryocystocele is a rare clinical presentation of congenital nasolacrimal duct obstruction with a functional obstruction at the valve of Rosenmüller above and a structural obstruction at the level of the valve of Hasner below. The clinical presentation is typically as a bluish cystic mass over the lacrimal sac area present since birth. They may have intranasal cystic extension and can occlude the airway passage in infants who are obligate nose-breathers. Here we describe a case of a 18 day old child with bilateral dacryocystoceles with large intranasal cysts who developed severe respiratory distress.

Objective: The aim of this video presentation is to highlight the technique of endoscopically visualizing the dacryocele and the intranasal cyst, and a step-by-step tutorial of marsupialisation to prevent recurrence. A cruciate marsupialization allows adequate drainage and prevents the obstruction from recurring. Intubation with stents, though not standard, may be done. The child in case here, underwent endoscopy guided cyst marsupialization and probing. At 3 months follow up, the child was symptom free.

Conclusions: Dacryocystocele is a rare presentation of Congenital nasolacrimal duct obstruction. Bilateral dacryocystoceles are decidedly rarer and can present with respiratory distress. Urgent endoscopic guided intervention in the form of marsupialization and probing is effective.

DAY 1 THURSDAY, October 5th 2017

14:00-15:45 SESSION III: Common Lacrimal Disorders and Surgery
Chairs: Juan Murube, Nikos Trakos

7. RESULTS OF LACRIMAL GLAND BOTULINUM TOXIN IN FUNCTIONAL VERSUS NON-FUNCTIONAL EPIPHORA

Swati Singh, Akshay G Nair, Mohd. Shahid Alam
Institute- LJ Eye Institute, Ambala, India

Background: Botulinum Toxin (BTX) usage in proximal canalicular obstructions, post punctal cautery, and functional epiphora has been reported with variable results in literature. No existing studies have compared its effectiveness/differences in outcome based on underlying etiology for epiphora.

Aim: To investigate differences in outcomes of BTX usage for epiphora secondary to lacrimal drainage disorders and functional epiphora.

Methods: Retrospective interventional case series, where cases were divided into two groups- functional and non-functional epiphora.

Results: A total of 37 eyes of 31 patients were identified, 13 males, and 18 females. The mean age was 52 years (median = 53, range 29–86). Functional epiphora group had 7 patients (8 eyes) subcategorized into functional (5), crocodile tears (1), and post seventh nerve palsy (1). Obstructive group (Non-functional) had 24 patients (29 eyes), subcategorized into proximal canalicular block (12), common canalicular block (6), punctal stenosis (3), post-traumatic nasolacrimal duct obstruction (1), and partial nasolacrimal duct obstruction (1). Mean pre-injection Munk scores were similar in both the groups (grade 4). At one month, mean Munk score improved to 1 and 2 in functional and non-functional group respectively after receiving mean 4 BTX units. Median reduction in Munk score was 75% in functional group versus 50% in non-functional group ($p=0.07$). No difference in terms of complications was noted (ptosis in 1 vs 2).

Conclusions: Reduction in epiphora after lacrimal gland BTX was observed more in functional epiphora compared to cases with physical obstruction in lacrimal drainage pathways.

DAY 1 THURSDAY, October 5th 2017

14:00-15:45 **SESSION III: Common Lacrimal Disorders and Surgery**
Chairs: Juan Murube, Nikos Trakos

8. PERFORATED PUNCTAL PLUGS FOR THE TREATMENT OF PUNCTAL STENOSIS: EASY AND INEFFECTIVE

Taskiran Comez

Introduction: Punctal stenosis can result in symptoms such as epiphora and significantly reduce the quality of life of patients. Perforated punctal plug insertion is an easy procedure and mostly used as a first step treatment in office.

Methods: Clinical, demographic and outcome data were collected retrospectively for 42 eyes of 16 males, 7 females totally 23 consecutive patients who presented to our Oculoplastic Clinic and underwent perforated punctal plug insertion. All patients had epiphora with punctal stenosis. 42 eyes underwent plug insertion.

Results: Of the 42 plugs, 23 plugs (54.8%) were lost and 19 (45.2%) were found in place at an average follow-up time of 7.1 months.

Of the 19 plugs in place, 8 were explanted due to occlusion of the plug with secretion and recurrent conjunctivitis, 2 plugs were migrated deep into the vertical canalculus with their caps visible. Of the 42 plugs, only 11 (26.1%) were well tolerated with significant symptomatic improvement.

Conclusion: Plug loss is a prominent problem in patients with perforated punctal plug insertion and punctal plugs appears to have resulted in failure in 77.5% of patients.

DAY 1 THURSDAY, October 5th 2017

14:00-15:45 **SESSION III: Common Lacrimal Disorders and Surgery**
Chairs: Juan Murube, Nikos Trakos

9. THE RESULTS OF 3-SNIP PUNCTOPLASTY WITH MITOMYCIN-C IN PATIENTS WITH FAILED PERFORATED PUNCTAL PLUGS

Arzou Taskiran Comez

Introduction: Perforated punctum plugs and punctoplasty are 2 approaches to treat punctal stenosis. In this study we aimed to evaluate the efficacy of 3-snip punctoplasty in patients with failed perforated punctal plugs.

Methods: A retrospective single-centre study including 31 puncti of 17 punctal stenosis patients treated with perforated plugs without symptom relief between 2015 and 2017 in Canakkale Onsekiz Mart University Department of Ophthalmology, Oculoplastics Department, are included in the study. Average duration of insertion was 5.12 months at which all had epiphora again. After the examination, 19 of the plugs were found to be in place although 12 were lost. All patients had epiphora, 6 had recurrent conjunctivitis with secretion and 1 with canaliculitis. All of the patients stated that having an implant in the eye made them nervous and affected their daily routine like washing face or making up. All patients with failed perforated punctum plugs were planned to have 3-snip punctoplasty with mitomycin C.

Results: Remained 19 of the plugs were removed in the surgery room and 3-snip punctoplasty along with mitomycin-C is performed to 31 eyes of 17 patients. During the surgery 5 lost plugs were found in the ampulla of the vertical canaliculus. 24 (77.4 %) patients had relief of symptoms and clinical improvement following punctoplasty, 4 had scarring requiring re-punctoplasty and 2 had total closure of the opening. Follow-up interval was an average of 12.2 months.

Conclusion: Punctoplasty along with mitomycin C resulted in better symptomatic control in patients with failed perforated plugs.

DAY 1 THURSDAY, October 5th 2017

16:15-18:00 SESSION IV: Evolving Lacrimal Technologies and Surgeries Chair: Mohammad Javed Ali

10. LACRIMAL CLINIC: A VALUE ADDED SERVICE TO PATIENTS – A NEW CONCEPT

Shantha Amrith¹, Gangadhara Sundar¹, Mark Thong², Yew Kwang Ong², Siew Shuen Chao²

1. Department of Ophthalmology, National University Hospital, Singapore

2. Department of Otolaryngology and Head and Neck Surgery, National University Hospital, Singapore

Background: Otolaryngologists are very adept in using the endoscope, and their clinics are well equipped for minor surgical procedures in the nose, thereby avoiding high cost set up in a stand-alone ophthalmology clinic. Therefore, it seems prudent to tap on their expertise for cost-effective treatments in tertiary hospitals.

Aim: The aim of this paper is to describe the functions of a Lacrimal Clinic.

Methods: A monthly service, jointly run by oculoplastic surgeons and otolaryngologists to treat patients with lacrimal problems; firstly to assess patients with nasal pathology pre-operatively, and secondly to examine patients in the early post-operative period after dacryocystorhinostomy (DCR) to troubleshoot potential problems, and intervene in a clinical setting pre-empting further surgery.

Results: From March 2013- March 2016, 76 patients were seen for 95 lacrimal in-patient procedures. The procedures consisted of DCRs, canaliculo-DCRs, Jones' Tube placement, endoscopic lacrimal recanalization etc. Most cases were seen post-operatively for routine debridement and assessment of patency. There were 8 cases where scar revision was done 2-4 months post-operatively, some with the use of anti-metabolites. There were 2 failures out of the 8 revisions, in both cases no antimetabolite was used. In few other cases, small adhesions were released, recurrent granulomas excised and Jones' tube exchanged.

Conclusion: Lacrimal clinic concept is new; it is jointly run by oculoplastic surgeons and otolaryngologists in ENT clinics. It is a value added service to our patients. As the problems are identified early, patients can be treated effectively in the outpatient setting avoiding expensive inpatient revision procedures.

DAY 1 THURSDAY, October 5th 2017

16:15-18:00 SESSION IV: Evolving Lacrimal Technologies and Surgeries
Chair: Mohammad Javed Ali

11. THERAPEUTIC DACRYOENDOSCOPY FOR CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION

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⁵ Department of Ophthalmology and Micro-technology, Yokohama City University, Yokohama, JAPAN

Aim: To evaluate the surgical outcome of therapeutic dacryoendoscopy for congenital nasolacrimal duct obstruction (CNLDO).

Material & Methods: A total of 54 eyes in 43 Japanese children aged from one year to seven years old (mean, 28.8 ± 14.6 months old) with clinically diagnosed CNLDO were included in this study. The blockage was probed under general anesthesia using a dacryoendoscope (MD3 with a 20G probe or MD10 with an 18G probe, Fiber Tech Co., Ltd., Japan). In most case, probing was followed nasolacrimal duct intubation using a self-retained bicanalicular lacrimal stent (Lacrifast, Kaneka Co., Ltd., Japan).

Results: Nasolacrimal duct intubation was performed for 51 eyes (94.4%). Dacryolith was observed in 4 eyes (7.4%) and successfully removed using a dacryoendoscope. The success rate of probing with and without nasolacrimal duct intubation was 100%. No complication was observed.

Conclusion: Therapeutic dacryoendoscopy showed a 100% success rate for CNLDO. Direct visualization inside lacrimal passage allowed for precise probing even in infants, leading to successful treatment for CNLDO without complication.

DAY 1 THURSDAY, October 5th 2017

16:15-18:00 SESSION IV: Evolving Lacrimal Technologies and Surgeries

Chair: Mohammad Javed Ali

12. USEFULNESS OF IMAGE-GUIDED NAVIGATION SYSTEM ASSISTED ENDOSCOPIC DACRYOCYSTORHINOSTOMY IN EAST ASIAN PATIENTS WITH THICK MAXILLARY BONE

Kana Takahashi¹, Shin Takahashi²

¹*Jouri Cosmos Eye Clinic, Japan*

²*Takahashi E.N.T. & Eye Clinic, Japan*

Background: According to the previous reports, East Asians have lower nasal bridge and thicker maxilla in comparison with Caucasians. Therefore, to obtain a thorough exposure of the lacrimal sac in endoscopic DCR in East Asian patients, we need to remove the maxillary bone extensively with safe and accuracy. Recently, image-guided navigation system (IGS) is regularly applied to endoscopic sinus surgery (ESS), especially in cases with extended polyps adjacent to orbit and skull base. Namely, IGS is able to provide the surgeon with great confidence by giving us the precise anatomical information of the intranasal cavity. From this point of view, we considered that IGS may also become a useful tool for predicting the exact extent of the lacrimal sac during drilling procedures of endoscopic DCR in East Asian patients with thick maxilla.

Aim: To evaluate the usefulness of IGS assisted endoscopic DCR in East Asian patients with lacrimal drainage obstructions.

Methods: We retrospectively reviewed the surgical records of patients who underwent endoscopic DCR without IGS (non-IGS group, 33 cases) and with IGS (IGS group, 67 cases) from October 2012 until March 2017. The drilling time and surgical complications were evaluated in both groups.

Results: The drilling time in IGS group was statistically shorter than that of non-IGS group. There were no surgical complications in IGS group, while two mild surgical complications occurred in non-IGS group.

Conclusion: IGS is a useful tool for endoscopic DCR in East Asian patients.

DAY 1 THURSDAY, October 5th 2017

16:15-18:00 SESSION IV: Evolving Lacrimal Technologies and Surgeries
Chair: Mohammad Javed Ali

13. NEW CLASSIFICATION OF CONGENITAL LACRIMAL FISTULA

Chaloupka K¹, Rebane R^{1,2}

¹Zürich University Eye Clinic, Switzerland, ²Tallinn Eye Clinic, Estonia

Background: Congenital lacrimal fistula is a rarely reported condition. However, it might be underdiagnosed as symptoms are often minor and the anomaly may go undetected. For the major review of congenital lacrimal fistula by Chung et al. (2016) only 36 relevant articles were found in the literature [1].

Aim: To classify different types of congenital lacrimal fistulae in order to improve diagnostic tools and choice of treatment.

Material & Methods: The records of eight patients with congenital lacrimal fistula were analyzed retrospectively. They were seen and managed by the first author (KC) from 2006-2012. Recorded data included demographic features, associated syndromes, type of treatment and outcome.

Results: Eight cases of lacrimal fistulae were identified, the findings analyzed and a new classification of congenital lacrimal fistula according to the location introduced.

Conclusion: We introduce a new classification of congenital lacrimal fistula (CLF-1 and CLF-2), allowing a straightforward identification of the expected anatomy of the malformation, the needed surgery and outcome.

Reference

1. Chung JQ, Sundar G, Ali MJ. Congenital lacrimal fistula: A major review. Orbit 2016; 35 (4):212-20

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DAY 1 THURSDAY, October 5th 2017

16:15-18:00 SESSION IV: Evolving Lacrimal Technologies and Surgeries

Chair: Mohammad Javed Ali

14. COLD-PLASMA JET NANO APPLICATION FOR JONES TUBER
Yang Seong-Won

Withdrawn

DAY 1 THURSDAY, October 5th 2017

16:15-18:00 **SESSION IV: Evolving Lacrimal Technologies and Surgeries**
Chair: Mohammad Javed Ali

15. ENDOSCOPIC TRANSCANALICULAR DACRYOCYSTORHINOSTOMY WITH HOLMIUM LASER: THE TUSCAN EXPERIENCE

Chiara Paci MD, **Fabrizio Franco MD**, Fausto Trivella MD
Eye Clinic, San Luca Hospital, Lucca – Italy

BACKGROUND: Endoscopy of the lacrimal system with miniaturized tools has been possible since 1990 and permits the direct evaluation of the anatomical structures. Both a laser and a miniaturized drill are available and permit recanalization in cases of stenosis under endoscopic control in the area of the canaliculi or the lacrimal sac.

AIM: to evaluate effectiveness and safety of endoscopic transcanalicular dacryocystorhinostomy with Holmium laser in patients with stenosis or obstruction of the lacrimal drainage system

METHODS: It is a retrospective non comparative consecutive case series study on a ten years experience . Twelve patients with stenosis or obstruction of the lacrimal drainage system treated by an experienced ophthalmoplastic surgeon at the San Luca Hospital Eye Clinic in Lucca. Every cases underwent endoscopic dacryocystorhinostomy with Holmium laser.

RESULTS: The main endpoints was functional rehabilitation of the lacrimal system. After the surgery all patients achieved the functional result. We did not have inflammatory or infectious complications. After a mean follow-up of 18 months for each patient, we had recurrence in all cases. Finally all patients underwent conventional external dacryocystorhinostomy and achieved the functional result without recurrences in all cases after a mean follow-up of 12 months.

CONCLUSION: We don't have a good functional result with the endoscopic dacryocystorhinostomy with Holmium laser. So, further clinical studies are needed to improve the endoscopic technique.

DAY 2 FRIDAY, October 6th 2017

11:15-13:00 **SESSION VI: Thyroid Eye Disease and Lacrimal System**
Chair: Raymond Douglas

16. THE LEVELS OF 12 CYTOKINES AND GROWTH FACTORS IN TEARS: GRAVES' HYPERTHYREOSIS VS. EUTHYREOSIS

Danijela Mrazovac, MD, **Jelena Juri Mandic, MD PhD**, Kresimir Mandic, MD PhD
Institution: Department of Ophthalmology, Clinical Hospital Centre Zagreb, School of Medicine, University of Zagreb

Purpose: Simultaneous analyses of the 12 cytokines and growth factors levels in single samples of human tears were performed. The results were compared between a group of healthy subjects and a group of patients with Graves' hyperthyreosis (GH) without thyroid-associated orbitopathy (TAO).

Methods: Determinations and concentration measurements of interleukins (IL-2, IL4, IL-6, IL-8, IL-10, IL-1 α , and IL-1 β) interferon (IFN- γ), tumour necrosis factor (TNF- α), monocyte chemoattractant protein (MCP-1), vascular endothelial growth factor (VEGF) and epidermal growth factor (EGF) were performed with single tear samples from 21 patients with hyperthyreosis and 22 healthy subjects. The analyses were performed using a Randox microchip with an Evidence Biochip Array Analyzer.

Results: We found significant differences between the healthy donor group and the hyperthyreosis group in the levels of IL-6, IL-10, VEGF, IL-1 α and MCP-1. The concentration of IL-6 was considerably higher in the hyperthyreosis group, IL-10 was higher in the healthy donor group, and VEGF and MPC-1 were higher in the hyperthyreosis group. The IL-8 and IFN- γ levels were higher in the hyperthyreosis group. The ratios of all of the cytokines to anti-inflammatory IL-10 were significantly elevated in the hyperthyreosis group.

Conclusion: There are clear differences in the levels of cytokines and growth factors in the tears of healthy subjects and patients with GH without TAO. Tear cytokine measurements could be related to "dry eye disease" (DED) symptoms and may play a role in the early detection of the subclinical form of TAO.

DAY 2 FRIDAY, October 6th 2017

11:15-13:00 **SESSION VI: Thyroid Eye Disease and Lacrimal System**
Chair: Raymond Douglas

17. MORPHOLOGIC PECULIARITIES OF LACRIMAL GLAND (LG) AT ENDOCRINOUS OPTHALMOPATHY (EOP)

Safonova T.N.

Scientific Research Institute of Eye Diseases, Moscow

Background: Imaging studies showed that LG increases in 26-41% of patients with EOP, and dry eye syndrome develops in 68,8%.

Aim: To study pathomorphologic changes of the LG at EOP activity stages.

Methods: The LG morphology was studied at biopats of 40 increased LG.

Immunophenotipical/histochemical methods were used. The indexes of vascularization and fibrosis were defined.

Results: In active phase LG was characterized by focal and diffuse lymphoid infiltration (70% of cells were CD20+ B-lymphocytes, 25% – CD4+ T-helpers, 5% – cytotoxic CD8+); increased index of vascularization ($p < 0,01$); eosinophilic infiltration of the vascular wall; dilatation and induration of interlobular and intralobular stroma; dystrophic changes of secreting epithelium of acini; duct deformation; deposits of IgG on the inner surface of plasmocytes, in granular substance of interacinic stroma. Expression of THR α -polyclone and THR α -monoclonal of LG acini in endothelial and smooth muscle cells of vessels and expression of THR- β in cytoplasm of myoepitheliocytes of acini and smooth muscle cells of vessels were determined.

LG changes in fibrosis stage were characterized by formation of fibrosis areas in interlobular and intralobular connective tissue, decrease of functional acini, ducts deformation.

Summary: Changes in LG at active phase is an evidence of autoimmune character of inflammation in gland. The presence of THR attributes LG to the “target-organ” in EOP. At fibrosis stage, decrease of secreting acini may be considered as the risk factor of dry eye syndrome.

DAY 2 FRIDAY, October 6th 2017

14:00-16:00 SESSION VII: Lacrimal Disorders and Trauma
Chair: Yasser Khan

18. VISUAL FUNCTION AFTER LACRIMAL STENTS

Tomoyuki Kamao

Purpose: It has been indicated that tear film associated disorder including dry eye causes visual disturbance. In the present study, to determine the outcomes of the visual function after nasolacrimal duct intubation (NDI), the visual function was assessed using the functional visual acuity (FVA) measurement system in the patients underwent nasolacrimal duct intubation (NDI).

Methods: One hundred eighty nasolacrimal duct obstructions underwent NDI guided by dacryoendoscope in 136 patients at Ehime University Hospital from December 2010 to May 2014 were studied. The mean age at surgery was 70.5 ± 10.4 years (range, 29-94 years). We measured corrected distance visual acuity (CDVA), functional visual acuity (FVA), visual maintenance ratio (VMR), tear meniscus height (TMH) with anterior segment optical coherence tomography and Schirmer I test values. The values were measured before surgery (pre-NDI) and 6 months after tube removal (post-NDI).

Results: FVA and VMR were significantly improved at post-NDI ($p < 0.0001$), while no significant difference was detected in CDVA between pre- and post-NDI. TMH and Schirmer I test values of post-NDI were significantly lower than those of pre-NDI ($p < 0.0001$). When Japanese diagnostic criteria for dry eye (2006) were applied at post-NDI tests, 32 eyes (17.8%) in 27 patients were diagnosed as dry eye. Thus subjects were divided into non-dry eye (N) and dry eye (D) groups, no significant difference was detected in CDVA between pre- and post-NDI in both groups. FVA and VMR were significantly improved post-NDI in the N group ($p < 0.0001$), but decreased in the D group ($p = 0.0436, 0.0334$). When the results at pre-NDI in the two groups were compared, no significant difference was seen in CDVA, FVA, or VMR, however, TMH and Schirmer I test values were significantly lower in the D group than the N group ($p = 0.0062, < 0.0001$). The sensitivity and specificity for dry eye diagnosis before surgery were calculated to be 67.9 and 68.8%, respectively when a cut-off value was determined as ≤ 10 mm in Schirmer I test.

Conclusions: The results suggest that NDI improve not only epiphora but also quality of vision in the patients with nasolacrimal obstruction. However, it should be careful that it may disturb visual function if the patients developed dry eye after surgery.

DAY 2 FRIDAY, October 6th 2017

14:00-16:00 **SESSION VII: Lacrimal Disorders and Trauma**
Chair: Yasser Khan

19. FROM EXTERNAL TO ENDONASAL DCR - MY EXPERIENCE USING THE DIRECT ENDOSCOPE

Palumaa, Kadi; Rebane, Reili

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Aim: Here we describe 25 cases treated with endonasal dacryocystorhinostomy (DCR) in East Tallinn Central Hospital Eye Clinic and give an overview of one surgeon's experience with learning the method.

Material and Methods: We present retrospective analyses of 25 patients, who were operated in Tallinn Eye Clinic. All patients underwent endonasal DCR with a direct endoscope by the first author (KP) in 2015 -2017. Recorded data include demographic overview, indications for operation and surgical outcome.

Results: Most of the patients were female (18/25) and left side was operated more often (17/25). All surgeries were performed under general anaesthesia with a direct endoscope, without a monitor screen. One patient experienced a major postoperative complication, liquorrhoa, which was managed by ENT surgeons two weeks after DCR. We are the only centre in the Baltics, where endonasal DCR is performed by an ophthalmologist. As we have almost 10 years of experience with DCR and have performed endonasal DCR for the past 3 years, we have also treated patients from abroad.

Conclusion: Endonasal DCR is a comprehensive method to treat patients with mainly chronic or acute dacryocystitis. As the amount of patients needing DCR in Estonia is relatively small (50-70 per year), using a direct endoscope is cost effective method. Endonasal DCR is becoming the method of choice for nasolacrimal duct obstruction at our clinic, with primary bicanalicular intubation and external DCR being used only for selected cases. The learning curve for endonasal DCR is steep, but as it is a refined method, the final result is worth it.

DAY 2 FRIDAY, October 6th 2017

14:00-16:00 **SESSION VII: Lacrimal Disorders and Trauma**
Chair: Yasser Khan

20. COMBINED INJURIES OF THE LACRIMAL DUCTS. WHAT TO DO?

Sergey Shkolnik

IRTC "EYE MICROSURGERY OF" (RUSSIA)

The most difficult task while treating lacrimal obstruction are combined injuries. Multilevel obstruction, trauma and congenital anomalies of orbit and facial skull, diseases of nasal cavity, deformation of eyelids and inner angle of eye included.

Purpose: To develop an algorithm of surgical treatment of lacrimal obstruction, complicated with additional levels of stenosis and pathology of adjacent structures.

Methods: We analyzed results of 42 surgeries. External, endonasal and transcanalicular approaches to lacrimal pathways and other methods of plastic reconstruction of soft tissues and face bones, orbit and nasal structures were used.

Results: best results in case of multilevel dacryostenosis were achieved by combining several approaches to lacrimal paths. Plastic surgeries with formation of lacrimal anastomosis and intubation were rendered in case of eye inner angle deformation. Stents made of polyurethane and silicone were used as intubation materials. In case of trauma and skull anomalies simultaneous or stage-by-stage surgeries on bones were rendered additionally. In case of concomitant ENT-pathology lacrimal anastomosis were combined with correction of nasal structures. Tear abduction recovery was achieved in 68% of cases. General anesthesia was used in 97%.

Conclusions: In case of complex pathology of lacrimal system individual approach, combination of various approaches and methods of treatment, participation of specialists of adjacent fields and good anesthesia are necessary.

DAY 2 FRIDAY, October 6th 2017

14:00-16:00 **SESSION VII: Lacrimal Disorders and Trauma**
Chair: Yasser Khan

21. BALLOON DACRYOPLASTY IN TEAR DUCT STENOSIS

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Background: the trend for development of novel minimally invasive technique in lacrimal stenosis correction persists.

Aim: to evaluate balloon dacryoplasty (BDP) outcomes in tear duct stenosis at different anatomical levels.

Materials and methods: we observed 148 patients (207 cases) with tear duct stenosis, among them 45 cases (group 1) with lacrimal canaliculus stenosis (BDP in subgroup 1.1, BDP with lacrimal canaliculus intubation in subgroup 1.2), 42 cases (group 2) with common canaliculus stenosis (BDP in subgroup 2.1, BDP with intubation in subgroup 2.2), 60 cases (group 3) with lacrimal sac cervix stenosis (BDP in subgroup 3.1, BDP with intubation in subgroup 3.2), 60 cases (group 4) with nasolacrimal duct meatus stenosis (BDP in subgroup 4.1, BDP with intubation in subgroup 4.2). The follow-up time was 12 months. We analyzed *Munk* score, the results of lacrimal scintigraphy and meniscometry.

Results: we observed positive results in 73% of cases in subgroup 1.1; in 91% of cases in subgroup 1.2; in 71% of cases in subgroup 2.1; in 81% of cases in subgroup 3.1; in 90% of cases in subgroup 3.2; in 77% of cases in subgroup 4.1; in 83% of cases in subgroup 4.2.

Conclusion: BDP is an effective approach for correction of tear duct stenosis. In case of lacrimal sac cervix stenosis correction intubation is not required; we recommend to intubate tear duct in cases of another localization of stenosis.

DAY 2 FRIDAY, October 6th 2017

14:00-16:00 **SESSION VII: Lacrimal Disorders and Trauma**
Chair: Yasser Khan

22. ACTINOMYCES CANALICULITIS – A FORGOTTEN DISEASE?

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Background: Actinomyces canaliculitis is a rare, yet arduous disease that is often misdiagnosed and consequently inadequately treated. Thus it might debilitate patients' quality of life for months or even years.

Aim of the Study: to present a retrospective series of cases with late diagnosis of Actinomyces infection.

Material and methods: 25 patients (17 women and 8 men) treated in the Department of Diagnostic and Microsurgery of Glaucoma, Medical University of Lublin, Poland between 2012 and 2017 for severe Actinomyces canaliculitis.

Results: The average time of treatment prior to definite diagnosis of Actinomyces canaliculitis averaged 26.8 months albeit with a considerable variability (SD 25.7 months) Patients were usually initially treated with long-term antibiotics for conjunctivitis, lacrimal pathway blockage, dacryocystitis, canaliculitis or sinusitis. In 3 cases an initial diagnosis of lacrimal ducts neoplastic transformation was suggested.

Conclusions: Differential diagnosis of all cases of chronic anterior infections resistant to standard treatment regime should involve Actinomyces canaliculitis.

DAY 2 FRIDAY, October 6th 2017

16:30-18:00 SESSION VIII: Blepharitis & Dry Eye
Chair: Geoffrey Rose

23. THE ASSOCIATION OF MINÖR SALIVARY GLAND BIOPSY RESULTS WITH TEAR FUNCTION TESTS IN PATIENTS WITH SJÖGREN SYNDROME

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Aim

To study the results of minör salivary gland biopsy results in Sjögren Syndrome diagnosis and its association with tear function tests.

Materials and Methods

Patients with symptoms of dry eye and dry mouth who were suspected for Sjögren Syndrome with laboratory testing in Physical Therapy and Rehabilitation Department in Canakkale Onsekiz Mart University referred to Department of Ophthalmology for minör salivary gland biopsy were included in the study. Ocular Surface Disease Index (OSDI), tear break-up time, tear osmolarity, Schirmer test and Oxford scoring for corneoconjunctival staining along with minör salivary gland biopsy were performed in all patients.

Results

16 women, 2 men total 18 patients were included in the study. The mean age of the patients were 49.2 ± 7.6 years; the duration of dryness symptoms for eye and mouth were for 42.1 ± 25.8 months. The mean OSDI score was 48.8 ± 17.2 ; Schirmer test results were 5.6 ± 2.9 ; and tear break up time was 4.6 ± 3.2 ; Oxford score for both eyes were 2.8 ± 1.4 ; and mean tear osmolarities were 304 ± 10.9 . The grading of minör salivary glands with Chisholm-Mason scoring system was grade 3.1 ± 1.03 ; in 14 (77.8%) patients the grading was 3 and 4. Tear function tests were found to be affected in all grade 3 and 4 patients.

Discussion

In this study we found that Sjögren Syndrome suspected patients with dry mouth and impaired tear function tests had positive minör salivary gland biopsy results. Minör salivary gland biopsy may be useful to diagnose patients who does not provide all criterias for Sjögren Syndrome.

DAY 2 FRIDAY, October 6th 2017

16:30-18:00 SESSION VIII: Blepharitis & Dry Eye
Chair: Geoffrey Rose

24. RADIOSURGERY AS METHOD OF SEVERE "DRY EYE" TREATMENT

Sergey Shkolnik

IRTC "EYE MICROSURGERY OF" (RUSSIA)

Obturation of lacrimal ducts is used frequently in case of dry eye syndrome. The most famous are lacrimal points blocking with obturators, electro-surgical coagulation and covering with conjunctival flap.

Purpose: use of radiosurgery coagulation method in case of severe dry eye syndrome treatment.

Method: simple surgery was rendered in 26 patients. As a result of examination expressed or irreversible insufficiency of tear product was revealed. Under local anesthesia deep coagulation of lacrimal channels with lacrimal points additional closing by bipolar pincers was rendered with Surgitron generator of radio frequency oscillations (3,8-4 MHz frequency)

Results: Total block of lacrimal abduction and improvement of eye surface state was achieved in all patients. Occlusion of lacrimal channels is confirmed by scintigraphy.

Conclusions: radiosurgery method of lacrimal channels obturation is the most effective and sparing method in case of irreversible dry eye syndrome cases.

DAY 2 FRIDAY, October 6th 2017

16:30-18:00 **SESSION VIII: Blepharitis & Dry Eye**
Chair: Geoffrey Rose

25. DYSFUNCTION OF MEIBOMIAN GLANDS AND DEMODEX PARASITE

Dr. Constantinos Pappas, Dr. Aikaterini Chaita, Dr. Ioannis Ntountas,

BACKGROUND: Demodex is a very common parasite of the skin, as there are indications that the Demodex attack occurs in anterior blepharitis and can be aggravated by MGD. Previously, the treatment methods were limited to alcohol-eluting the eyelid and some ointments that were not very effective.

AIM: Ocular surface disease is the most common cause of patients, who visit our private clinics, in percentage 60-80% and 2/3 of them suffer from blepharitis. The aim of the work is to prevent, diagnose and treat dysfunction by Demodex parasite.

METHODS: Blepharitis is divided into anterior and posterior. In the majority of cases both coexist with different gravity. The incidence of blepharitis on the ocular surface is due to dysfunction of the meibomian glands. The primary cause of dysfunction of meibomian glands is due to the Demodex parasite.

RESULTS: Demodex that affects humans is not the same as those that infect animals. There are 2 types of Demodex: Folliculorum and Brevis. Folliculorum is mainly found in hair follicles and is longer. Brevis is found in the sebaceous glands of the skin and in the meibomian glands of the eyelids.

SUMMARY: Infection begins in childhood and over the years the infestation is increasing. At the age of 60 is 80% of infestation infected and at the age of 70 is 100% infected.

DAY 2 FRIDAY, October 6th 2017

16:30-18:00 SESSION VIII: Blepharitis & Dry Eye Chair: Geoffrey Rose

26. SOFT CONTACT LENS FOR SATURATION WITH DIFFERENT DRUGS

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There is no model of treatment for SCL saturation optically opaque and lipophilic drug substances, which takes into account the effect of pressure on the eyelids.

Aim. The development of therapeutic SCL, which can saturate the optically opaque and lipophilic drugs.

Material and methods. The material of a lens is silicone-hydrogel. Lenses are made by laser. An evaluation of the dynamics of the drug yield from the saturated lens is carried out by conversion spectrometry.

Result. Lens contains a non-through depots filled with drug. Lens's diameter is 14.3 - 15 mm. At the edge of the lens there is a chamfer of 1 mm. Depots are located on the grid on the outer surface of the lens or in the annular recesses on the inner peripheral surface of the lens. Depots have a hemispherical shape with the micronotches located on their inner surfaces. Medication leaves the lens under pressure of the eyelids during blinking. The concentration of the drug on the eye surface depots depends on the frequency of blinking. Therapeutic SCL can be used effectively for 7 - 14 days until the complete emptying of the depot.

Conclusion. A new model of therapeutic SCL can saturate different drug substances, including lipophilic and optically opaque substances. This may increase the time of drug exposure, reduce the duration of dry eye treatment.

DAY 2 FRIDAY, October 6th 2017

16:30-18:00 SESSION VIII: Blepharitis & Dry Eye

Chair: Geoffrey Rose

27. LASER DOPPLER FLOWMETRY IN PATIENTS WITH EVAPORATIVE DRY EYE

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Aim: To analyze the effectiveness of treatment of the evaporative dry eye with Laser Doppler flowmetry (LDF) of eyelids skin.

Material & Methods: Sixty-eight eyes of 34 patients with confirmed meibomian gland dysfunction-related evaporative dry eye were enrolled in the study. The patients used topical terpenes gel twice daily, for 2 months. The ophthalmological investigations included Schirmer I test, tear break-up time, meibomian expressibility and LDF of eyelids skin analysis (mean perfusion of blood and lymph flow, myogenic and neurogenic blood and lymph flow oscillations). Statistical significance was set at $p < 0.05$. The effect of treatment of the evaporative dry eye was analyzed via paired t-test.

Results: Data of LDF was significantly improved in all patients after 2 months of treatment. Schirmer I test, tear break-up time, meibomian expressibility improved in 29 patients. Clinico-functional results of 5 patients were not statistically significantly different at baseline and after treatment, so they continued therapy. Thus, the LDF was the criterion for evaluating the effectiveness of treatment.

Summary: LDF is a safe, reliable tool to quantify alterations blood and lymph flow of the eyelids skin in patients with evaporative dry eye. As a valuable tool for investigating the pathophysiology of the evaporative dry eye, LDF could be used to assess the effectiveness of therapy.

DAY 2 FRIDAY, October 6th 2017

16:30-18:00 **SESSION VIII: Blepharitis & Dry Eye**
Chair: Geoffrey Rose

28. DRY EYE SYNDROME AND MENOPAUSE

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Aim: The aim of this literature review is to examine the latest developments and therapeutic interventions in correlation between dry eye syndrome (DES) and menopause.

Material & Methods: A thorough search was performed on known medical databases and repositories (Scopus, Medline, Embase , Clinicaltrials.gov and Cochrane Library) having dry eye syndrome and menopause as main terms.

Results: Dry eye syndrome prevalence increases in advanced ages and especially in postmenopausal women. Hormonal changes influence the tear film layers in various ways (eg reducing the lipids production in the case of oestrogens whilst androgens induce their production and secretion).The mechanism with which sex hormones relate to dry eye symptoms has not yet been clarified. A higher prevalence of dry eye has been connected with Hormonal replacement therapy (HRT), pinpointed earlier as a probable therapeutic option for dry eye