



7th International Symposium on
Meniere's Disease
and **Inner Ear Disorders**

**Ménière's Disease and
Inner Ear Disorders:
Update 2015**



Edited by
Maurizio Barbara

PROCEEDINGS OF THE 7TH INTERNATIONAL
SYMPOSIUM ON MÉNIÈRE'S DISEASE AND
INNER EAR DISORDERS

Proceedings of the 7th International Symposium on Ménière's Disease and Inner Ear Disorders

Edited by

Maurizio Barbara



Kugler Publications/Amsterdam/The Netherlands

ISBN 13: 978-90-6299-254-6

Kugler Publications
P.O. Box 20538
1001 NM Amsterdam, The Netherlands
info@kuglerpublications.com

website: www.kuglerpublications.com

© 2016 Kugler Publications, Amsterdam, The Netherlands

All rights reserved. No part of this book may be translated or reproduced in any form by print, photoprint, microfilm, or any other means without prior written permission of the publisher. Kugler Publications is an imprint of SPB Academic Publishing bv, P.O. Box 20538 1001 NM Amsterdam, The Netherlands

Table of Contents

Preface	xi
Cause, Pathogenesis and Symptoms of Ménière's Disease <i>Michael M. Paparella, Sebahattin Cureoglu</i>	1
Pathology	
Ménière's disease: histopathological analysis, novel ultrastructural, molecular and MRI findings <i>Gail Ishiyama, Ivan A. Lopez, Ali R. Sepahdari, Akira Ishiyama</i>	9
The utriculo-endolymphatic (Bast) valve – Clinical significance <i>A. Belal</i>	19
Pathways to the inner ear	
Gentamicin distribution in the ear following local applications <i>A.N. Salt, J.J. Hartsock, R.M. Gill, E. King, B. Kraus, S.K. Plontke</i>	25
Drug delivery via the oval window <i>Stephen J. O'Leary, Elisha B. King, James B. Fallon, Dan J. Brown, Alec N. Salt</i>	31
Endolymphatic SAC	
A new murine model for Ménière's disease – Vasopressin-induced endolymphatic hydrops <i>Masaya Takumida, Yoshiaki Katagiri, Matti Anniko</i>	35
Ion transport in endolymphatic sac epithelial cells on the basis of experimental animal researches <i>Nozomu Mori, Takenori Miyashita, Ai Matsubara, Ryuhei Inamoto</i>	41
Audiological issues	
On the role of depletive tests: A review analysis <i>Simonetta Monini, Edoardo Covelli, Silvia Tarentini, Vania Marrone, Maurizio Barbara</i>	49

Kinesiology taping and kinetic training in rehabilitation of somatosensory vertigo <i>Katarzyna Pawlak-Osińska, Henryk Kaźmierczak, Katarzyna Kulczyńska</i>	53
The usefulness of OPK parameters analysis for saccadic and smooth pursuit disturbances interpretation <i>Henryk Kaźmierczak, Katarzyna Pawlak-Osińska</i>	63
Effects of bodytilt on multifrequency admittance tympanometry <i>V. Franco-Vidal, D. Bonnard, J. Nodimar, V. Darrouzet</i>	67
Otoacoustic emissions in sudden sensorineural hearing loss <i>Avi Shupak, Reem Zeidan, Rafael Shemesh</i>	71
A comparison of ECochG, VEMP, VNG and rotary chair results in patients diagnosed with Ménière's disease <i>John A. Ferraro, Pamela Svitak</i>	83
Electrocochleography and cervical vestibular evoked myogenic potential test in Ménière's disease <i>Sasan Dabiri Satri, Nasrin Yazdani, Payam Abolhasani, Behrouz Amirzargar, Nima Rezazadeh</i>	89
Predictive value of ECochG in offspring/siblings of individuals with Ménière's disease <i>John A. Ferraro, Jonathan R. Wilson</i>	95

Genetics/Proteomics

Knockdown of HES-1 and COUP-TFI using shRNA gives rise to new hair cells and supporting cells in organotypic culture of the organ of Corti <i>J. Oiticica, A.C. Batissoco, K. Lezirovitz, M.M. Bissoli, D.B. Zanatta, B.E. Strauss, R.C. Mingroni-Netto, R.F. Bento</i>	103
A proteomics-based approach in Ménière's disease <i>Giuseppe Chiarella, Claudio Petrolo, Alfonso Scarpa, Giuliano Sequino, Giovanni Cuda, Ettore Cassandro</i>	117
Role of oxidative stress in the cochlear damage in acquired sensorineural hearing loss <i>Anna R. Fetoni, Fabiola Paciello, Rolando Rolesi, Sara L.M. Eramo, Diana Troiani, Gaetano Paludetti</i>	123

Vestibular issues

Ocular (oVEMP) and cervical (cVEMP) VEMPs in patients with 'clinically certain' Ménière's disease <i>Sarah-Anne Johnson, Greg A. O'Beirne, Emily Lin, John Gourley, Jeremy Hornibrook</i>	129
--	-----

Prevalence, associated symptoms and prophylactic medication effectiveness of vestibular migraine in an otolaryngology clinic <i>Angelique Van Ombergen, Vincent Van Rompaey, Paul H. Van de Heyning, Floris L. Wuyts</i>	133
The mystery of vertigo solved! The interactive GPS system <i>Aziz Belal</i>	137
Role of perineuronal nets in vestibular compensation <i>Federico Dagna, Andrea Albera, Daniela Carulli, Alessio Faralli, Ferdinando Rossi, Gian Piero Giordano, Roberto Albera</i>	139
Improving diagnostics of patients with vestibular paroxysmia <i>Berina Ihtijarevic, Vincent Van Rompaey, Paul Van de Heyning, Floris Wuyts</i>	145
Vestibular neuritis according to VHIT testings. Clinical entities and prognostic factors <i>Romain Glatre, Charlotte Hautefort, Benjamin Verillaud, Christelle Domange, Philippe Herman, Romain Kania</i>	149

Imaging

Imaging of endolymphatic space in patients with Ménière's disease and non-otological diseases <i>Tadao Yoshida, Michihiko Sone, Kyoko Morimoto, Shinji Naganawa, Tsutomu Nakashima</i>	159
Endolymphatic hydrops in patients with unilateral and bilateral Ménière's disease <i>Kyoko Morimoto, Tadao Yoshida, Michihiko Sone, Masaaki Teranishi, Shinji Naganawa, Saiko Sugiura, Tsutomu Nakashima</i>	163
MRI evaluation of endolymphatic hydrops and clinical application for surgical management <i>Michihiko Sone, Tadao Yoshida, Tohru Mukaida, Masaaki Teranishi, Tsutomu Nakashima, Shinji Naganawa</i>	167
MRI inner ear imaging and tone burst electrocochleography in the diagnosis of Ménière's disease <i>Jeremy Hornibrook, Edward Flook, Sam Greig, Melissa Babbage, Tony Goh, Mark Coates, Rachel Care, Philip Bird</i>	171
MR imaging of inner ear endo-peri-lymphatic spaces at 3 Tesla after intratympanic contrast agent administration in definite Ménière's disease <i>S. Salice, A. Tartaro, M. Colasurdo, G. Filograna Pignatelli, A. Pacella, F. Cazzato, G. Neri</i>	177
Understanding Ménière's disease (MD): The contribution of endolymphatic hydrops imaging (EHI) <i>Kumiko Y. Orimoto, Stephen J. O'Leary</i>	183

- The relationship between perilymph and cerebrospinal fluids in Ménière's disease: New findings in MRI after intratympanic administration of gadolinium
Giampiero Neri, Fiorella Cazzato, Andrea Di Tano, Alessandro Pacella, Giulio R. Filograna Pignatelli, Simone Salice, Armando Tartaro 187

Dehiscence syndrome

- Migraine headache and the migraine variants of hemiplegic migraine, ocular migraine and vestibular migraine in otic capsule dehiscence syndrome: Outcomes after targeted repair
P. Ashley Wackym, Carey D. Balaban, Heather T. Mackay, Dale M. Carter 193
- Superior canal dehiscence and 'near-dehiscence' syndrome: clinical and instrumental aspects
Andrea Castellucci, Gianluca Piras, Cristina Brandolini, Gian Gaetano Ferri, Giovanni Carlo Modugno, Antonio Pirodda 203
- Retrospective cohort study on hearing outcome after transmastoid plugging in superior semicircular canal dehiscence syndrome: Safe and effective strategy in SSCD syndrome
Gilles Van Haesendonck, Paul Van de Heyning, Vincent Van Rompaey 221
- Transmastoid plugging of superior semicircular canal dehiscence: the subarcuate canal on HR-CT is a useful surgical landmark
Th. Somers, L. Rotteveel, B. de Foer, J. van Dinther, A. Zarowski, R. van Spauwen, E. Offeciers 227

Clinical issues

- Cerebral venous insufficiency in Ménière's disease
Roberto Filipo, F. Ciciarello, Giuseppe Attanasio, Patrizia Mancini, Edoardo Covelli, L. Agati, F. Fedele, Marika Viccaro 237
- Ménière's disease symptomatology in relation to the AAO-HNS 1995 Guidelines
Roberto Albera, Claudia Cassandro, Andrea Albera, Andrea Canale, Jacopo Colombini, Carmine F. Gervasio 243
- Cervical specific protocol and results for 300 Ménière's patients followed for a minimum of five years
Michael T. Burcon 251
- Epidemiological characteristics of Ménière's disease in Japan: An update
Hideo Shojaku, Yukio Watanabe, Hiromasa Takakura, Masahiro Tsubota, Michiro Fujisaka, Mamoru Suzuki, Noriaki Takeda 255

Idiopathic acute labyrinthine diseases and Ménière's disease: The necessity of a multidisciplinary approach <i>Antonio Pirodda, Cristina Brandolini, C. Borghi</i>	261
--	-----

Treatment

Current status of the treatment procedure for the patients with Ménière's disease in Japan – Unique treatment methods in Japan <i>Izumi Koizuka</i>	267
Antisecretory factor and medical food – Novel therapy concepts <i>Jan G. Bruhn</i>	273
Antisecretory factor-inducing therapy improves patient-reported functional levels in Ménière's disease <i>Samuel C. Leong, Surya Narayan, Tristram H. Lesser</i>	277
SPC-Flakes® in the prophylaxis of Ménière's disease <i>Roberto Teggi, Vincenzo Marcelli</i>	281
Ménière's disease patients in the acute stage <i>Augusto P. Casani, Niccolò Cerchiai, Elena Navari</i>	285
Ménière's disease patients in the rehabilitative stage <i>Michel Lacour, Laurence Bernard-Demanze</i>	289

Intratympanic treatment

Fifteen years of intratympanic pressure treatment for disabling Ménière's disease <i>Maurizio Barbara, Edoardo Covelli, Anna Teresa Benincasa, Luigi Volpini, Simonetta Monini</i>	297
A study for local treatment using three different polymers aimed for middle ear administration <i>Cecillia Engmér-Berglin, Pernilla Videhult-Pierre, Andreas Ekborn, T. Bramer, Katarina Edsman, Malou Hultcrantz, Göran Laurell</i>	301
Intratympanic dexamethasone: potential in the prevention of cisplatin ototoxicity <i>Avi Shupak, Tal Marshak, Levana Levi, Mariana Steiner</i>	307
Intratympanic dexamethasone and gentamicin in the treatment of disabling vertigo in Ménière's disease <i>Rosemary B. Ojo, Julie A. Daugherty, Jack J. Wazen, Carmelo Ortega, Karen P. Draper, Joanna M. Tagarelli, Jack H. Thompson</i>	315
Intratympanic or transtympanic drug therapy? <i>Aziz Belal</i>	323

Surgery

- Sac surgery for treatment of Ménière's disease
Ricardo F. Bento 329
- Osteoplastic refinement in endolymphatic sac surgery
Randall A. Bly, Larry G. Duckert 335

Cochlear and vestibular implant

- Vestibular implant for sensory restoration – candidacy and epidemiology
Bryan K. Ward, Daniel Q. Sun, Charles C. Della Santina 343
- Cochlear implant and Ménière's disease: vestibular and auditory function
Raquel Manrique-Huarte, D. Calavia, Nicolas Pérez-Fernández, I. Ruiz-Erenchun, M.V. Ucar, Manuel Manrique 349
- Cochlear implant in Meniere's patients with asymmetric hearing loss
Domenico Cuda, Alessandra Murri 357
- Spatial hearing improvement and long-term suppressive effect on tinnitus after cochlear implantation in single-sided-deaf patients with and without Ménière's disease
Vincent Van Rompaey, Griet Mertens, Paul Van de Heyning 363
- Vestibular function before and after cochlear implantation in patients with post-lingual deafness: A prospective, observational study
Patricia A. Abramides, Roseli S.M Bittar, Robinson K. Tsuji, Ricardo F. Bento 367
- Index of Authors** 371

Preface



For a mono-thematic meeting that gathers all the experts in the field every five years, one would expect to find many novelties and clarifications that had the right time to develop and to be validated. We all know that this would be unlikely to occur for Ménière's disease, one of the most intriguing, somewhat frustrating pathologies that, over more than 150 years since its first description, has kept scientists and dedicated professionals busy for any development that would be helpful for curing our affected patients.

This book contains a collection of contributions that were delivered at the VII International Symposium on Ménière's disease and Inner Ear Disorders, held in Rome on October 17 to 20, 2015, and that were addressing many of the known, but also some of the unknown aspects of this inner ear disorder. Among them, a particular interest has been solicited by the *genetic issue* involving the inner ear in general and that will surely represent in the future one of the new pathogenetic and diagnostic lines to pursue for the study of the Ménière population. A great impact is also foreseen by the routine application of specifically-designed *imaging procedures* that would enable to confirm the presence of endolymphatic hydrops as the real pathognomonic finding of the disease, and to follow-up the affected subjects during its clinical course, along with the role played by the different therapeutical approaches for it. The treatment of Ménière's disease seems also to have taken a straightforward direction towards the *intratympanic delivery* of drugs, where steroids appear to be promising molecules in this regard, without running particular risks for an additional inner ear damage, as it could be possible when ototoxic molecules are used.

Noteworthy is also the possibility for a self-administered local *pressure treatment* to positively act on the disease, allowing to avoid to resort to any surgical procedure for its resolution. The final part of the contributions that have highlighted the Meeting, and consequently this book, is devoted to the rehabilitation of the affected population from the most frequent irreversible damage caused by a long-lasting disease, *i.e.*, deafness. The proposal of *cochlear implantation*, not only in the classical bilateral cases that would be rare for this disease, but also for the unilateral forms related to a single-sided deafness, is clearly seen as a promising tool to apply for restoration of the binaural auditory function, a problem that, for many years, has been left neglected and untreated.

A real novelty for this monothematic Meeting is represented by the report of a possible *vestibular prosthesis* that would enable mostly the bilaterally-impaired subjects to restore their balance disorder.

In summary, with all the limitations that a book containing contributions from a Meeting nowadays carries in term of scientific impact, it is the editor's wish to promote it so as it could serve, in analogy with the publications of the previous

Meetings, as a guide for the young colleagues who wish to get knowledge of Ménière's disease, as a cue for the development of new research lines, or – at least – as a memory of those fascinating days spent in the Eternal City to place on your crowded, hopefully not dusty, shelf.

Prof. Dr. Maurizio Barbara
President of the VII International Symposium

A handwritten signature in black ink, appearing to read "Maurizio Barbara". The signature is written in a cursive style with a large initial 'M' and a long, sweeping underline.