Head-over-heels... from dizziness to a broken heart

TAKOTSUBO CARDIOMYOPATHY PRECIPITATED BY AN ACUTE MENIÈRE'S DISEASE ATTACK : CASE REPORT

Authors: Analise Wang [1] Juliet Meldrum [1,2]

[1] Department of Otolaryngology and Head and Neck Surgery, Dunedin Public Hospital, Te Whatu Ora – Southern, New Zealand.
[2] FRCS (Otol) 2014; CCT (OTOL) 2017

INTRODUCTION

TAKOTSUBO CARDIOMYOPATHY (TC), OR BROKEN-HEART SYNDROME, IS A NON-ISCHAEMIC CONDITION WITH SUDDEN BUT TEMPORARY WEAKENING OF THE LEFT VENTRICLE; IT IS CLASSICALLY TRIGGERED BY PHYSICAL OR EMOTIONAL STRESSORS. ACUTE ATTACKS OF MENIÈRE'S DISEASE (MD) COULD PRODUCE BOTH PROFOUND PHYSICAL AND PSYCHOLOGICAL STRESS.

CASE

- 79 year old woman with right sided Menière's Disease [Figure 1] developed sudden central crushing chest pain during an acute vertigo attack.
- Transported to ED and managed under Cardiology, with initial concerns for an NSTEMI.
- ECG: pathological Q waves. High sensitivity troponin 583ng/L.
- Coronary angiogram: no obstructive coronary disease.
- Echocardiogram: Consistent with Takotsubo Cardiomyopathy [Figure 2]

CASE MANAGEMENT

- Cardiology team considered the severe physiological and emotional stress associated with her recurrent vertigo to be the most likely precipitating factor for the development of Takotsubo Cardiomyopathy.
- Commenced patient on bisoprolol 2.5mg BD, bendroflumethiazide 2.5mg OD, bezafibrate 400mg OD.
- Reviewed in ENT clinic for management of Menière's Disease: Betahistine increased to 48mg TDS. Two injections of dexamethasone (8mg) administered two weeks apart into right ear. No further vertigo episodes.

TAKOTSUBO CARDIOMYOPATHY

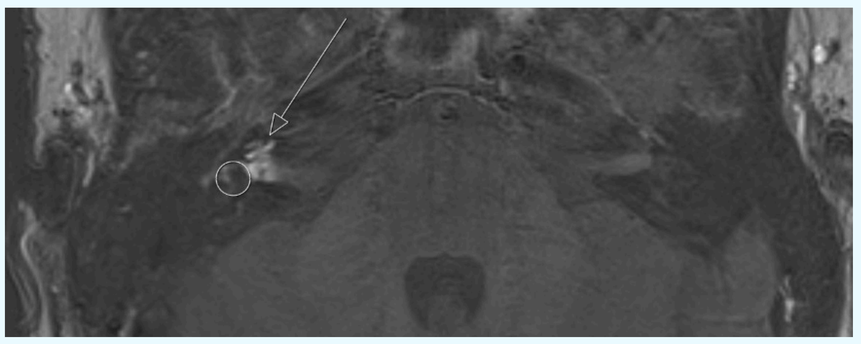
Originally described in 1990s and named after a traditional Japanese basket (takotsubo pot) used to catch octopus.

Epidemiology: Predominantly affects post menopausal women, but men may have worse prognosis.

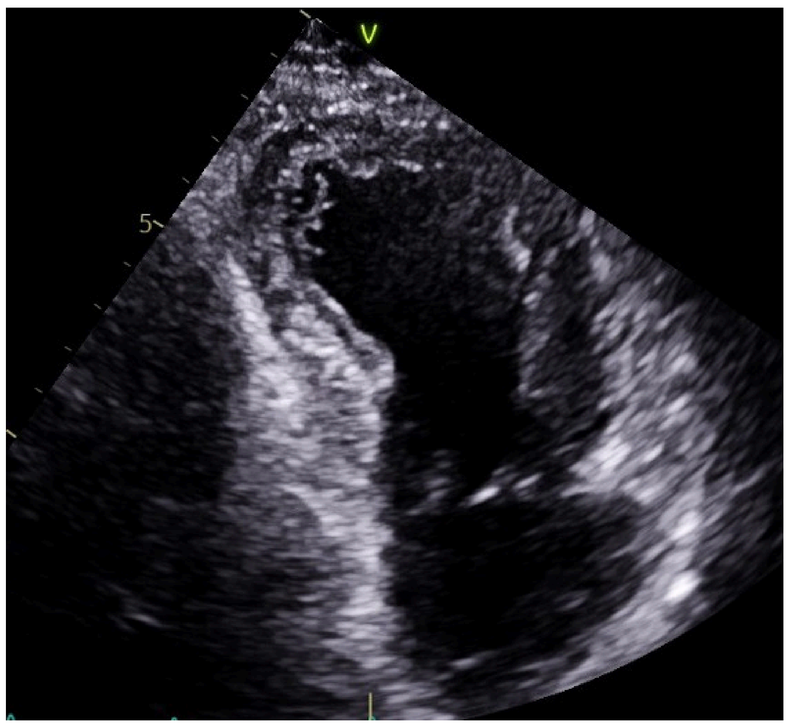
History and Exam: Mimics acute coronary syndrome with acute chest pain or dyspnoea. This develops after a recent emotional or physical stressor.

Diagnosis: ECG changes include ST elevations or T-wave inversions, qTC prolongation may be seen. There is only a mild-moderate troponin rise. BNP markedly elevated. Coronary angiogram will not show obstructive coronary disease or acute plaque rupture. Echocardiogram (classical variant) will show apical systolic ballooning with hypokinesis or akinesis of the mid and apical segments extending beyond a single coronary territory.

Management: Beta-blockers, ACE-inhibitors for 3-6 months with follow up echocardiograms. Patient education and stress management. Optimising other medical conditions.



[Figure 1] MRI hydrops: Axial REAL-IR 4 hours post gadolinium administration showing right endolymphatic hydrops: vestibular grade 3 (circle); cochlear grade 2 (arrow)



[Figure 2] Transthoracic echocardiogram: four-chamber view of heart. Apical segment of the left ventricle is akinetic and the mid wall segments are hypokinetic. The basal segments contract well. These create a ballooning appearance, thus, resemblance to a Japanese octopus pot.

MENIÈRE'S DISEASE

A chronic inner ear disorder with 2 or more spontaneous episodes of vertigo lasting 20 mins-12 hours with low-mid frequency SNHL in the affected ear, fluctuating aural symptoms, which are not better accounted for by alternative vestibular diagnoses. Ages 40-60s, M=F distribution.

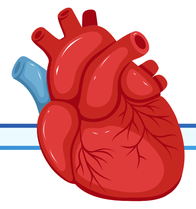
Postulated mechanism is excess endolymphatic fluid, which distends the scala media and displaces Reissner's membrane. Various genetic, autoimmune, anatomical factors are implicated.

DISCUSSION

Pathophysiology of both Menière's Disease and Takotsubo Cardiomyopathy are incompletely understood.

For Takotsubo cardiomyopathy, most widely supported mechanism involves neurohormonal derangements:

Strong association with stressors (i.e. domestic violence, deaths, natural disasters, interpersonal conflicts, financial losses, acute medical illness or major trauma) → Complex interaction between neocortex, brain stem, limbic system, spinal cord → Locus coeruleus + hypothalamic-pituitary adrenal axis triggered → Excessive catecholamine release → Microvascular spasms, myocardial stunning, myocardial dysfunction and/or direct injury. Therefore, the sympathetic nervous system (SNS) is involved in the pathophysiology of TC.



In the context of Menière's Disease, there are many articles supporting the significant impacts on physical and emotional well-being and psychosocial stress, especially with recurrent vertiginous episodes. Furthermore, There is emerging evidence that SNS hyperactivity may also be associated with acute attacks, but this is still an area of active investigations. A small Japanese study in 2022 of 129 patients found that nine patients who developed an acute Menière's attack displayed activation of SNS and suppression of parasympathetic nervous system on pupillometry testing. Another small study of labyrinthectomy speciments found higher concentrations of alpa-1 and beta-2 adrenergic receptors in vestibular hair cells from patients with MD compared with controls.

Taken together, these findings raise the possibility that an acute MD attack may act as a physical and emotional stressor, promoting sympathetic activation implicated in TC. However, whether the autonomic response (if any) from MD is sufficient to precipitate catecholamine release in TC, has never been investigated.

TWO SIMILAR CASES

Literature search on PubMed shows only two reported cases of Takotsubo Cardiomyopathy occurring after vertigo episodes, but none specifically from Menière's Disease.

A) 76 year old woman who developed Takotsubo Cardiomyopathy, after becoming violently vertiginous during canalith repositioning for her right posterior canal BPPV. Authors presumed the emotional/physiological/psychological stress induced by the repositioning triggered this event.

Karatayli-Ozgursoy S, Lundy LB, Zapala DA, Oken KR. Takotsubo cardiomyopathy and canalith repositioning procedure for benign paroxysmal positional vertigo. J Am Acad Audiol. 2010 Feb;21(2):73-7; quiz 139-40. doi: 10.3766/jaaa.21.2.2.

B) Short article from a Cardiothoracic's Journal. 77 year old woman who developed Takotsubo Cardiomyopathy following a brief episode of severe vertigo and headache. Modest rise in troponin, slight V1-3 ST segment elevation. Global LV function slightly impaired. Article did not specify cause of her vertigo or medical background.

Breithardt OA, Becker M, Kälsch T, Haghi D. Follow-up in Tako-tsubo cardiomyopathy by real-time three-dimensional echocardiography. Heart. 2008 Feb;94(2):210. doi: 10.1136/hrt.2006.109413.

CONCLUSION

To our knowledge, there are no published reports describing Takotsubo cardiomyopathy occurring during an acute Menière's Disease attack. The temporal association in this case report raises the possibility that acute vestibular stress from Meniere's disease may act as a potential physiological stressor or precipitant for Takotsubo cardiomyopathy. Most individuals recover well after Broken Heart Syndrome, with this patient experiencing almost complete recovery clinically and on echocardiogram after four months.

REFERENCES

01 Alahmadi MH, Tivakaran VS. Takotsubo Cardiomyopathy. [Updated 2026 Apr 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430798/

02 Perez-Carpena P, Lopez-Escamez JA. Current Understanding and Clinical Management of Meniere's Disease: A Systematic Review. Semin Neurol. 2020 Feb;40(1):138-150.

03 Li X, Zhang N, Song Y, Zhang T, Lyu Y, Jian H, Li Y, Wang J, Li W, Hu Y, Fan Z, Li N, Zhang D, Wang H. A Stress-Neuroendocrine-Myeloid Inflammation Axis Is Associated with the Progression of Ménière's Disease. Brain Behav Immun Health. 2026 Feb 6

04 Xiao AY, Kanaris A, Ishii M, Lekovic GP, Lopez IA, Ishiyama G, Ishiyama A. Increased Adrenergic Receptor Expression in Meniere Disease. Otol Neurotol. 2026 Jul 23.

05 Perez-Carpena P, Lopez-Escamez JA. Current Understanding and Clinical Management of Meniere's Disease: A Systematic Review. Semin Neurol. 2020 Feb;40(1):138-150.

Health New Zealand Te Whatu Ora Southern

NZSOHNS