

BRAIN DAMAGE IN COMMERCIAL BREATH-HOLD DIVERS

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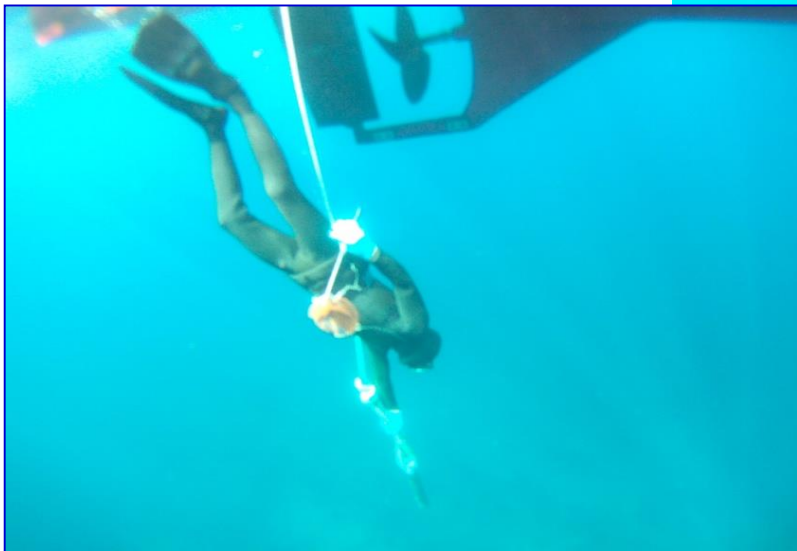
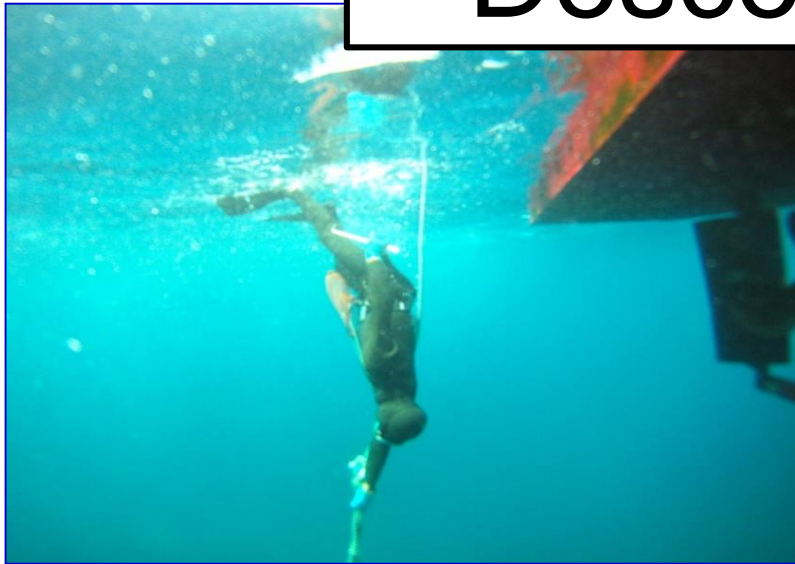
DCI in breath-hold diving

- Neuro-DCI in breath-hold divers
 - Cross. 1962, 1965
 - Kohshi. 1998, 2000, 2001
 - Mango. 1999
 - Batle. 2004
 - Tamaki. 2010 a, b
- Brain lesions in compressed air divers
 - Yanagawa. 1998
 - Erdem. 2009
- Brain lesions in breath-hold divers?

Diving work in Ama diver



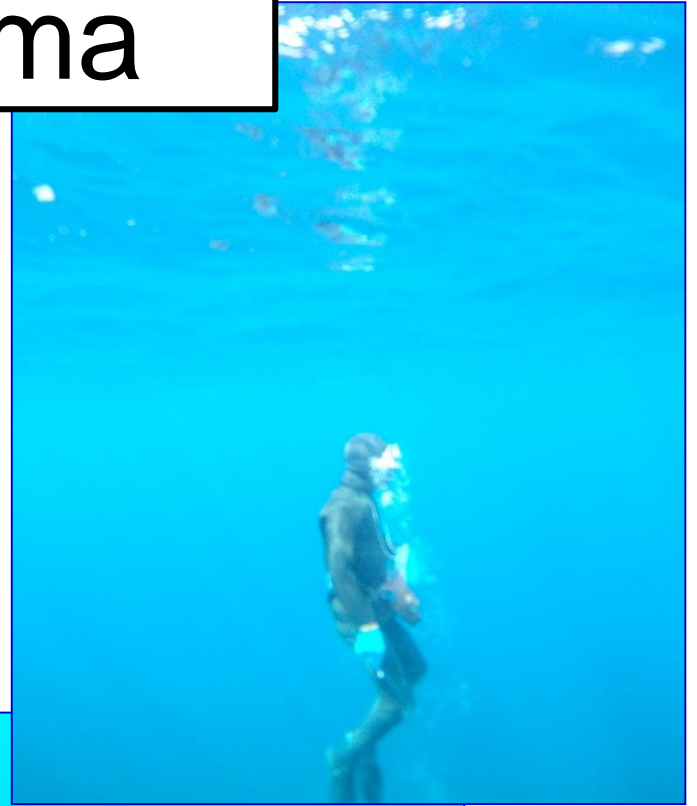
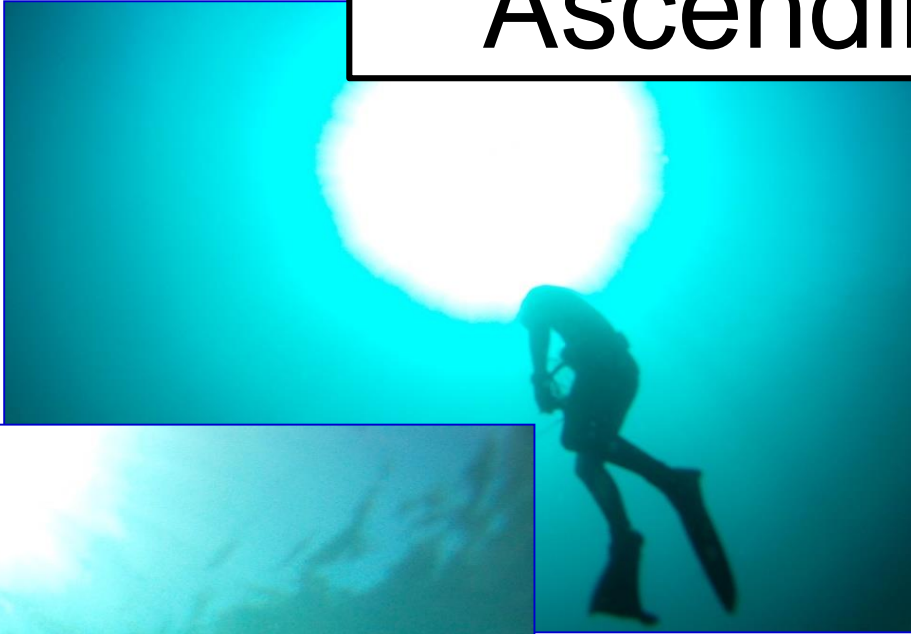
Descending Ama



Ama on the bottom



Ascending Ama



Diving profiles in Ama (n=12)

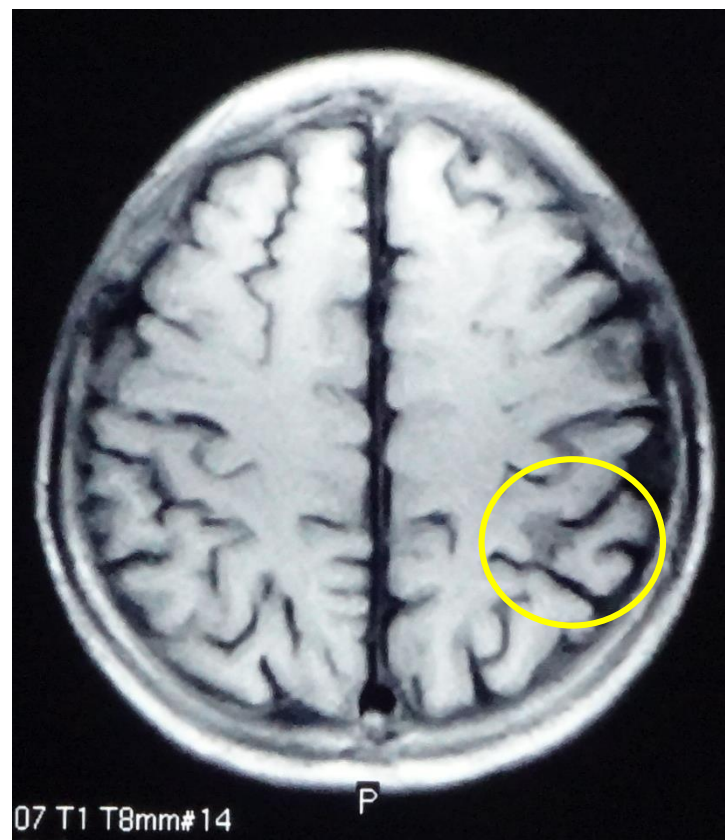
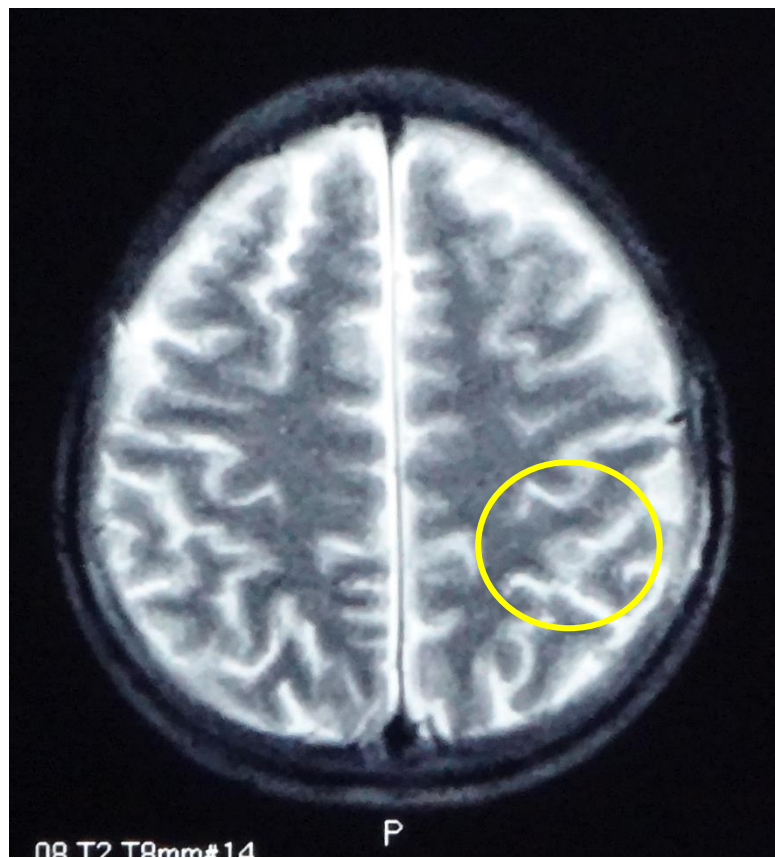
Diving time (sec)	63.8 ± 12.1 (42.5 – 78.3)
descending time (sec)	9.1 ± 2.3 (6.2 – 14.5)
bottom time (sec)	38.4 ± 8.4 (26.6 – 50.0)
ascending time (sec)	16.4 ± 3.2 (9.5 – 22.3)
Surface interval (sec)	48.0 ± 7.8 (35 – 57)
Diving depth (m)	12.5 ± 2.8 (7.9 – 17.8)
Length of diving shift (min)	186.2 ± 26.7 (143 – 225)
Number of dive /hour /Ama	30.4 ± 3.9 (26 – 37)
Number of dives/Ama	94.0 ± 15.7 (75 – 131)

Diving & medical histories

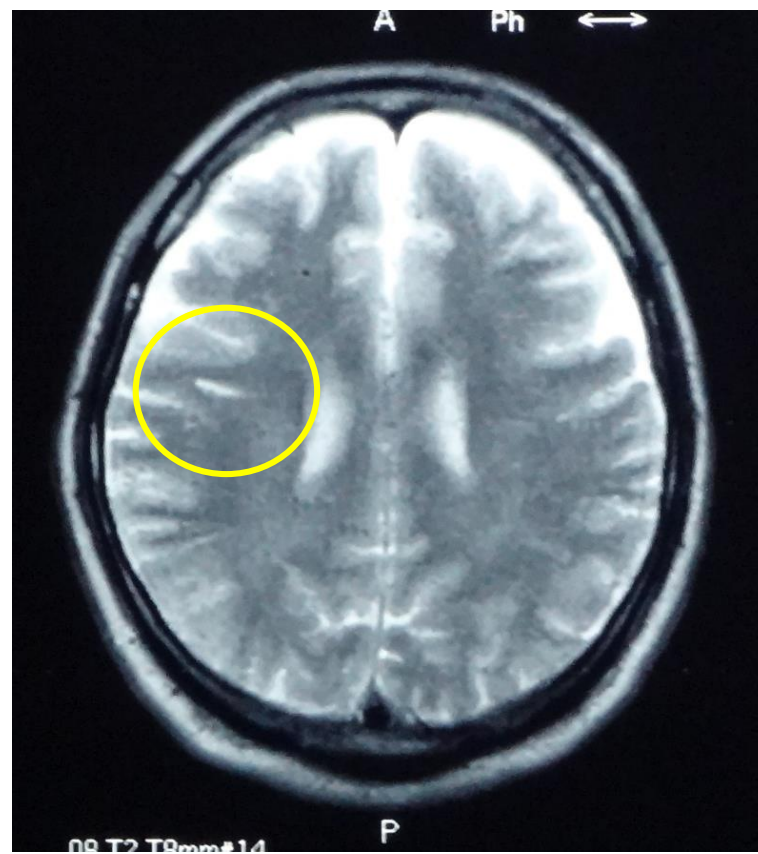
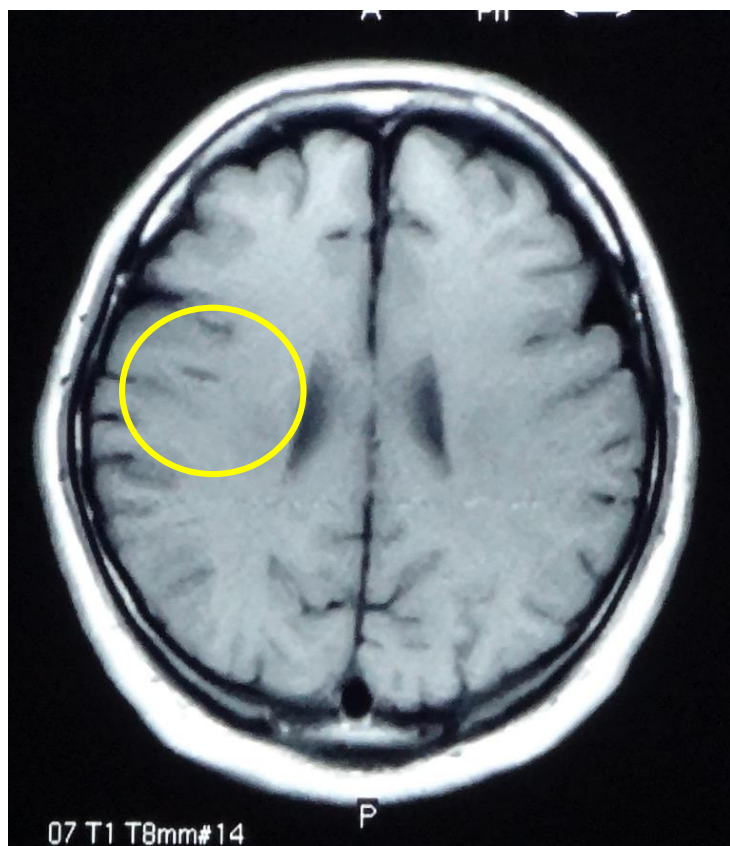
No. /age(yr)	careers of Ama/Funado (yrs)	weight bar /belt (kg)	cigarette	BP	No. /age(yr)
1/58	24/23	23/7	-	120/80	1/58
2/49	17/12	20/5	20/day	110/66	2/49
3/44	21/14	24/6	20/day	122/74	3/44
4/48	30/9	20/4	-	□	4/48
5/59	27/27	18/1	10/day	130/72	5/59
6/56	21/21	20/4	-	122/64	6/56
7/61	38/34	20/4	-	138/74	7/61
8/61	36/34	20/4	-	162/74	8/61
9/54	30/30	20/6	-	132/80	9/54
10/56	40/40	20/6	-	□	10/56
11/58	40/40	20/6	40/day	154/82	11/58
12/55	34/31	20/7	20/day	112/70	12/55

Neurological events and MRI findings

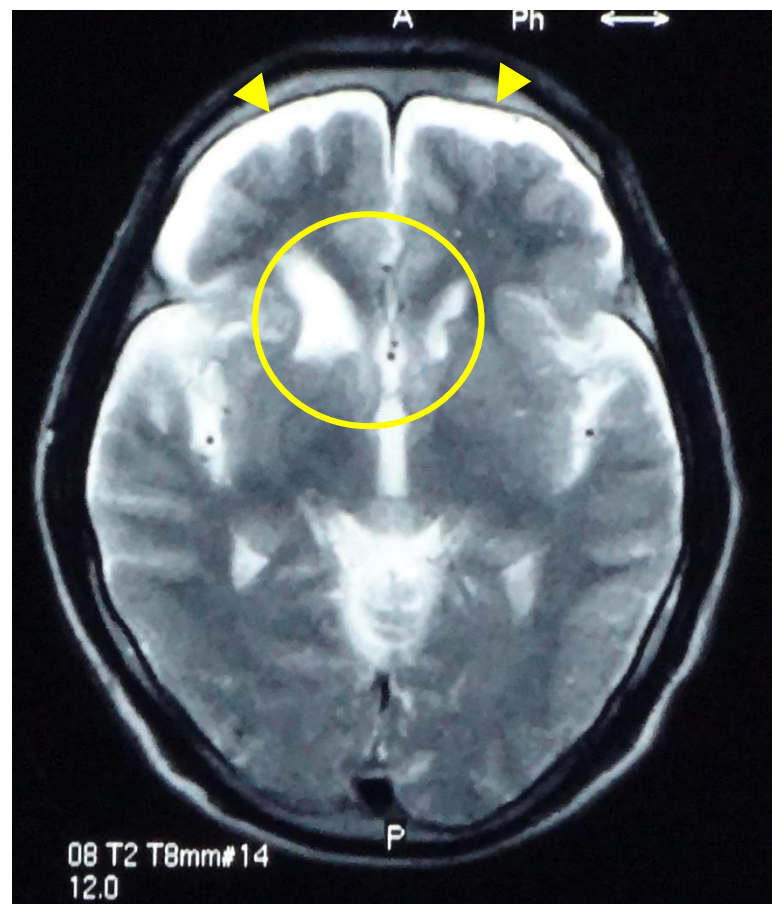
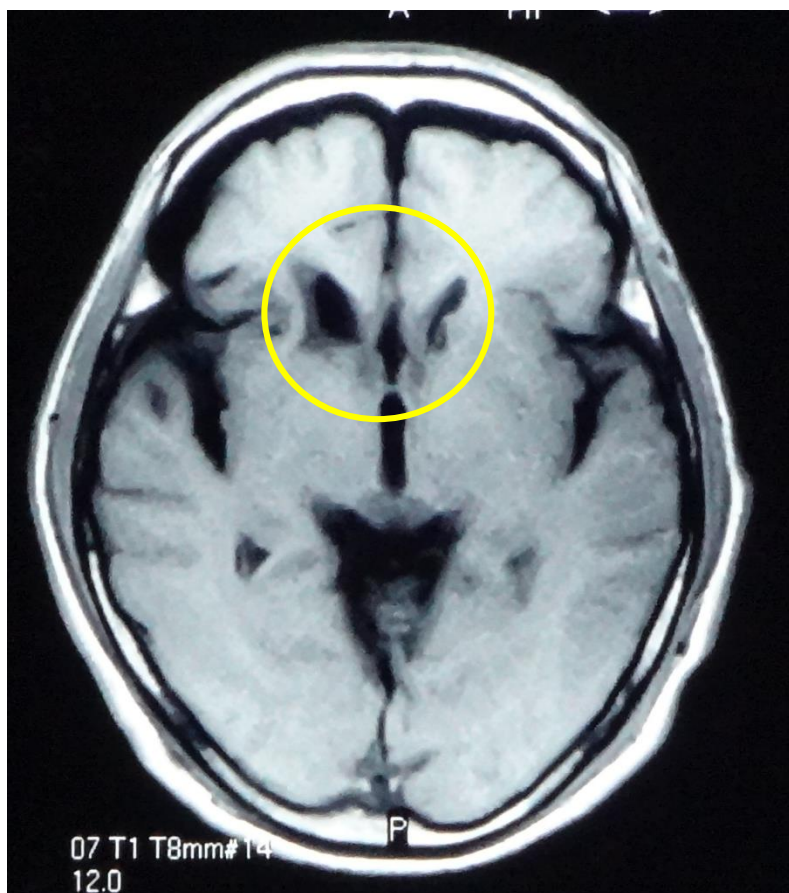
No	Neuro-DCI	MRI findings
1	-	cortex-subcortex (1), white matter (1)
2	-	cortex (3)
3	-	negative
4	speech, motor	subcortex (1)
5	-	cortex (1), subcortex (1)
6	-	basal ganglia (1)
7	sensory	cortex (1), basal ganglia (2), old hemorrhage (1)
8	-	subcortex (1), white matter (2)
9	-	cortex (1), white matter (2), thalamus (2)
10	-	cortex (3), basal ganglia (1)
11	motor	white matter (1), baasal ganglia (2), subdural effusion
12	sensory	cortex (1), subdural effusion



No.2



No.5



No.11

Summary

- ✓ Four of 12 Ama divers experienced transient stroke-like events.
- ✓ Eleven divers displayed MRI abnormalities.
- ✓ Long-term commercial breath-hold diving can cause brain damages.