

Sunken Brain Syndrome

Tan Yeow Leng

Department of Rehabilitation Medicine, Singapore General Hospital, Singapore

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***Corresponding Author:** Yeow Leng T, Singapore General Hospital, Singapore. E-mail: tanyeowleng2010@gmail.com

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A 34-year old Chinese lady presented to the hospital in 2013 with acute left sided weakness and was found to have a right middle cerebral artery territory infarct requiring thrombolysis using intravenous alteplase. Her condition deteriorated post thrombolysis as it was complicated by right subdural hematoma, left parieto-occipital hematoma with mass effect and midline shift, for which she required urgent decompressive craniectomy and insertion of ventriculo-peritoneal (VP) shunt for hydrocephalus.

Post-operatively she had severe physical and cognitive impairments. She was discharged home with a caregiver after an extensive period of inpatient rehabilitation. Repeated computed tomography (CT) brain between 2014 to 2016 revealed interval resolution of hematoma and stable hydrocephalus. (Figure 1). In late 2017 she

was noted to have right gaze preference. Her Glasgow Coma Scale was 15 with no changes to her cognition or behavior.

Blood pressure was 110/60 mmHg and pulse rate was 72/minute. Physical examination revealed concavity on the left temporalparietal region of the head. A repeat CT brain showed a concavity of the left craniectomy site suggestive of sunken brain syndrome (SBS) and progressive hydrocephalus from partial shunt blockage without trans-tentorial herniation (Figure 2). Prompt neurosurgical consult was sought and this was quickly followed with an acrylic cranioplasty and revision of VP shunt. She was reviewed post-operatively with resolution of right gaze preference.

SBS can present with varied motor and cognitive deficits, with higher incidence in male and a wide range of duration from

craniectomy to cranioplasty of between 10 days to 7 years [1]. Vasung et al. suggested that SBS is most frequently diagnosed in the second month post craniectomy [2]. This condition is also known as sinking skin flap syndrome or “syndrome of the trephined”. SBS is postulated to arise from negative pressure gradient between the atmospheric and the intracranial environment with changes in posture, dehydration and cerebrospinal fluid diversion as possible aggravating factors [3].

At present, it is still unclear which subgroup of craniectomy patients are more prone to develop SBS. There are studies which suggest higher frequency in craniectomy size of more than 100 cm². In terms of treatment, neurological recovery following cranioplasty is well established [4]. The average time to achieve the greatest improvement post-craniectomy has been reported to be near 3 months [1].

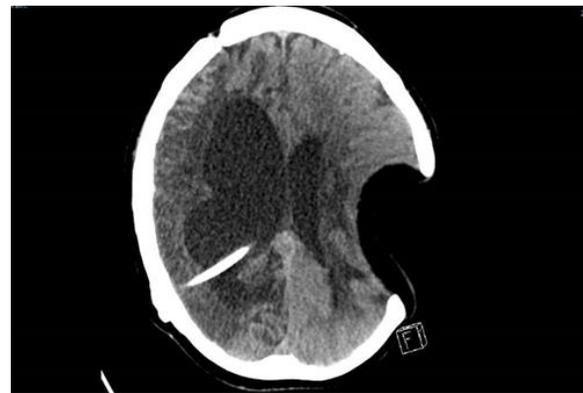
Even though SBS may not occur in every craniectomy case, it is important to keep a lookout for possible clinical features which may be suggestive of development of SBS. These include new onset of motor, cognitive deficits, language difficulties, altered level of consciousness, headache, seizures or cranial nerve palsies [1]. There are no diagnostic criteria for SBS and hence good history taking and physical examination with a high index of suspicion and low threshold for early imaging

can help to prevent progressive neurological deterioration.

Figure (1): Computed Tomography of the brain done in 2014 prior to the development of sunken brain syndrome (SBS). A ventriculoperitoneal shunt was inserted



Figure (2): Computed Tomography imaging illustrating the development of SBS in 2017. Progressive hydrocephalus was noted with partial shunt blockage



References

1. Ashayeri K, Jackson E, Huang J, et al. (2016) Syndrome of the Trephined: A Systematic Review. Neurosurgery; 79(4): 525-534.

Yeow Leng T (2018) Sunken Brain Syndrome. *J Hum Physiol*; 1(1): 101.

2. Vasung L, Hamard M, Soto MCA, et al. (2016) Radiological signs of the syndrome of the trephined. *Neuroradiology*; 58(6): 557-568.
3. Sedney CL, Dillen W, Julien T (2015) Clinical spectrum and radiographic features of the syndrome of the trephined. *J Neurosci Rural Pract*; 6(3): 438- 441.
4. Flavio RR, Marco AZ, Luis GD, et al. (2013) Sinking skin flap syndrome with delayed dysautonomic syndrome-An atypical presentation. *Int J Surg Case Rep*; 4(11): 1007-1009.