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Case Report

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Ayurvedic management of unilateral decompressive craniectomy and cranioplasty sequelae - a case report

Abstract

Stroke is the leading cause of disability and more than half of the stroke survivors will end up severely impaired. The prevalence of stroke in India ranges from 40 to 270 per 100 000 population. Like any other surgical procedure, decompressive craniectomy is not without risk and cranioplasty also carries its own risks. Some of the complications arising out of these surgeries may require additional surgery which further increases the risk to the patient for neurological deterioration or death. The present article deals with a diagnosed case of post hemi craniectomy squeal clinically presented as left sided hemiplegia, focal seizures/ myoclonic jerks and irritable mood. The Ayurvedic diagnosis of pakshaghata was made and various panchakarma procedures were implemented along with internal Ayurvedic medicines. Two assessments were taken before and after treatment on NIH-SS (National Institute of Health Stroke Scale) and SS-QOL (Stroke Specific Quality of Life Scale). There is 57.1% relief on NIH-SS and 83.5% improvement found on SS-QOL in present case. Ayurvedic panchakarma procedures and medicines were found effective in the management of post hemi craniectomy squeal. The recovery was promising and worth documenting.

Keywords: hemi craniectom, decompressive craniectomy, stroke, ayurveda, pakshaghata, focal seizures

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Introduction

According to WHO (world health organization) publication, 'Gloabal health risks: Mortality and burden of disease attributable to selected major risks', cardio-vascular disease accounts for 30% of deaths globally. Out of these, 5.7million deaths (i.e. 9.7% of all deaths) are caused by stroke. Stroke is the leading cause of disability and more than half of the stroke survivors will end up severely impaired.[1] The prevalence of stroke in India ranges from 40 to 270 per 100000 populations.[2] Decompressive craniectomy (DC) has been used in the management of raised intra cranial pressure (ICP) or herniation syndrome. A large portion of the skull is removed to allow swollen brain to herniate outwards in DC. Cranioplsaty is another surgical procedure follows DC in which the autologous skull or synthetic material or bio-ceramics are used to repair the skull defect caused by DC. DC is not without risk like any other surgical procedure and cranioplasty also carries its own risks. Some of the complications arising out of these surgeries may require additional surgery which further increases the risk to the patient for neurological deterioration or death.[3]

Here we are reporting a case of ischemic stroke, has undergone DC followed by cranioplasty and has been suffering with focal seizures, non-functioning left upper limb with irritable mood. The patient came to our care for an Ayurvedic management for his condition. Written and informed consent was obtained from the patient for the publication of the present case report.

Case description

A 57year aged old gentleman came to our care (11.07.2016), with the complaints of left sided weakness, pedal edema (left leg), myoclonic jerks / focal seizures (involving left upper and lower limb), irritability / aggressive mood, drowsiness, frequent urinary tract infections, gaze preference to the right, hypertension and dyslipidemia. This gentleman has suffered with an ischemic stroke (May 2014) and undergone right decompressive craniectomy for right middle cerebral artery (MCA) infarction (May 2014) followed by right side titanium cranioplasty (December 2014). He has made progress since then. He is left with a non functioning upper limb but able to manage this well. He mainly resides in a wheel chair, however does mobilize with a tripod / quad stick (Figure 1). He has reported recurrent urinary tract infections and experiences poor flow, terminal dribbling, penile pain and dysuria. He has developed seizures followed by surgery which comes without warning, four times a week and causes his left sided limbs to shake. He is fully awake during the seizure episodes and is confused afterwards. He also had abdominal pain, bloating / discomfort. He has been taking anti-epileptics, anti-hypertensive, thrombolytics, NSAID's and laxatives. He has not satisfied with the western medicines and management for his condition and came to our care for Ayurvedic treatment with the hope of getting functional recovery of left upper and lower limb. Hematological, biochemical investigation reports were within normal limits (26 & 30.08.2016) (Table 1). No past history of head injury, diabetes, cardiac pathology and any major medical illness found. No positive family history of stroke, diabetes, hypertension, dyslipidemia and cardio-vascular pathology found. Patient has undergone surgery for varicose veins of right lower limb. At the time of examination patient's vital functions were normal and patient was drowsy and responded to vocal commands. Tendon reflexes were exaggerated; muscle tone was increased in left upper and lower limb with positive babinski. Clinical examination revealed a soft, non tender abdomen with no palpable bladder. DRE (digital rectal examination) revealed a 30gm benign feeling prostate. Pitting edema was found in left lower limb. Patient used to smoke, takes alcohol and not having allergy to any drug or food item.

Diagnosis, assessment & treatment

Patient got right MCA infarction (ischemic stroke) and undergone right decompressive craniectomy followed by elective cranioplasty.

CT brain (18.05.2014) revealed evidence of extensive thrombus involving right MCA and right internal carotid artery (ICA) (Table 1). Total two assessments were carried out. Baseline / initial assessment was taken on the first day of starting *Ayurvedic* treatment (11.07.2016) and second assessment was carried out at the time of discharge (21.03.2017). A criterion of assessment was based on the scorings of NIH-SS (National Institute of Health - Stroke Scale)[4] and SS-QOL (Stroke Specific Quality of Life Scale).[5] Ayurvedic diagnosis of 'Pakshaghata (vama parshwa)' is made and treated accordingly.

Initially line of treatment was planned to control focal seizures, myoclonic jerks, to improve mood, to reduce urinary tract infection, to reduce pedal edema and to bring stability in general condition of the patient (from 11.07.2016 to 14.09.2016). Later allopathic medicines which the patient has been consuming like, anti-epileptics, anti-hypertensive's, thrombolytics, NSAID's and laxatives were withdrawn and replaced by *Ayurvedic* internal medicines (from 24.01.2017 to 21.03.2017) (Table 2).

Table 1 Investigation reports

Date	Name of investigation	Report
05.11.2013	MRI scan of Lumbo-sacral spine	Showed disc bulge at L4 - L5 and L5 – S1
18.05.2014	CT Brain	Extensive thrombus within the right internal carotid artery (ICA) and right middle cerebral artery (MCA) commencing 1.6 cm from the right common carotid artery bifurcation.
	Repeat CT Brain after few days	There has been evolution of the previously seen right MCA territory infarction with hypodensity now seen in the entire MCA territory with a significant associated increase in swelling throughout the supratentorial brain, new midline shift to the left of 10mm, generalized sulcal effacement and effacement of the right lateral ventricle.
15.07.2015	X-Ray of left shoulder	Normal report
23.07.2015	USG Abdomen	Moderate prostatic hypertrophy and mild right renal pelvis dilatation seen.
08.10.2015	Barium meal study	Normal report.
31.12.2015	Flexible cystoscopy	Normal report.
09.04.2016	Gastroscopy	Mild duodenitis (erythematous);
	Colonoscopy	Few scattered diverticula in the sigmoid colon which denotes, 'sigmoid diverticular disease'.
26.08.2016	Urine for culture and sensitivity	No organism isolated after 48 hours of aerobic incubation;
	Liver function tests	Normal report;
	Serum creatinine	1.3mg / dl;
30.08.2016	Hematological investigations like hemoglobin, WBC count, RBC count, Platelet count etc;	Within normal range.
10.01.2017	Prothrombin time (PT), Activated partial thromboplastin time (APTT), liver function tests, lipid profile and routine hematological investigations;	Within normal range.
01.03.2017	Serum urea	56mg / dl
	Serum cholesterol	223mg / dl
	Serum triglycerides	92 mg / dl
	Serum HDL	58 mg / dl
	Serum LDL	146.6 mg / dl
	Serum VLDL	18.4mg / dl
	Cholesterol / HDL ration	3.84
	Serum LDL / HDL cholesterol	2.52
	ESR	32mm in 1 hour

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Table Continued...

Date	Name of investigation	Report
	Serum cholesterol	223mg / dl
	Serum triglycerides	115mg / dl
	Serum HDL	56.5mg / dl
18.03.2017	Serum LDL	143.5mg / dl
	Serum VLDL	23mg / dl
	Cholesterol / HDL ration	3.94
	Serum LDL / HDL cholesterol	2.53

Table 2 Intervention

Duration	Medicine	Dose	Frequency	Anupaana
11.07.2016 to 18.08.2016	1. Abhayarishta	20ml	twice a day, after food	with equal quantity of water
	2. Neeri tablets	500mg	twice a day, after food	with water
19.08.2016 to 14.09.2016	1. Neeri tablets	500 mg	twice a day, after food	with water
	2. Palsineuron capsules	1gm	twice a day, after food	with water
09.01.2017 to 23.01.2017	1. Palsineuron capsules	1gm	twice a day, after food	with water
24.01.2017 to 28.02.2017	1. Rasa rajeshwara ras	250mg	twice a day, after food	with water
	2. Prasaaranyadi kwatha	15ml	twice a day, before food	with 45 ml of water
	3. Kalyana avaleha choornam	3gm	twice a day, after food	with honey
	4. Cardocalm tablets	500mg	twice a day, after food	with water
	5. Maha yogaraja guggulu	500mg	twice a day, after food	with water
01.03.2017 to 21.03.2017	1. Sheetaprabha tablets	500mg	twice a day, after food	with water
	2. Varanadi kwatha	15ml	twice a day, before food	with 45 ml of water
	3. Dhanwantaram 101 avarti sofgels	2 sofgels	twice a day, after food	with water
	4. Cardocalm tablets	500mg	twice a day, after food	with water
	5. Maha yogaraja guggulu	500mg	twice a day, after food	with water
Panchakarma intervention				
11.07.2016 to 02.08.2016 & 19.08.2016 to 31.08.2016 & 09.09.2016 to 14.09.2016	Udwartana with Yava kola kuluthadi choorna			
03.08.2016 to 18.08.2016 (Kaala vasti schedule) & 01.09.2016 to 08.09.2016 (Yoga vasti schedule)	1. Patra pottali pinda sweda with Prasaranyadi tailam 2. Bashpa sweda (in steam chamber) 3. Niruha vasti (A. Saindhava lavana - 6 gm B. Madhu - 100 ml C. Sindhuvara eranda tailam - 100 ml D. Satapushpa & Hinguvachadi kalkam - 25 gm E. Dashamoola & Rasna saptaka kwatha - 400 ml F. Gomutra arka - 100 ml G. Kalyanaka ksharam - 3 gm) (or) 4. Anuvasana vasti with Sahacharadi tailam – 80 ml			
09.01.2017 to 23.01.2017	1. Udwartana with Yava kola kuluthadi choorna 2. Nasya karma with Dhanwantaram 101 avarti tailam			
24.01.2017 to 31.01.2017 (Yoga vasti schedule) & 08.02.2017 to 23.02.2017 (Kaala vasti schedule)	1. Patra pottali pinda sweda with Kottamchukkadi kuzhambu 2. Bashpa sweda (in steam chamber) 3. Niruha vasti (A. Saindhava lavana - 6 gm B. Madhu - 150 ml C. Vastyamayantaka ghritam - 100 ml D. Satapushpa kalkam - 25 gm E. Varanadi kwatha - 400 ml) (or) 4. Anuvasana vasti with Pippalyadi anuvasana tailam – 80 ml			
01.02.2017 to 07.02.2017	Takra dhaara			
24.02.2017 to 28.02.2017	1. Udwartana with Yava kola kuluthadi choorna 2. Shiro pichu with Ksheera bala tailam			
01.03.2017 to 21.03.2017	1. Patra pottali pinda sweda with Dhanwantaram kuzhambu 2. Bashpa sweda (in steam chamber)			

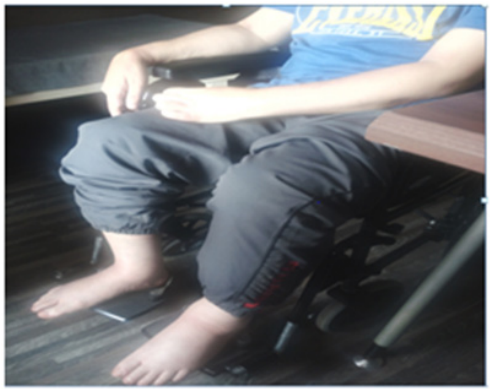

Figure 1 Left sided hemipegia with pitting edema at left foot.

Figure 2 Shiro pichu.

Discussion

DC is an effective means of controlling elevated ICP and it is also life saving; while the procedure is technically straight forward, it places the patient at risk for many non-trivial complications, which can negatively impact outcome. Complications of DC are mainly of three types, hemorrhagic, infectious/inflammatory and disturbances of the cerebrospinal fluid (CSF) compartment. Complications which are associated with cranioplasty also fell under similar major types with additional complications relating to the bone flap.[3]

Pakshaghata is a *vata vyadhi* (disease caused by *vata dosha*) and can be correlated with hemiplegia/stroke. *Panchakarma* (five major cleansing procedures) procedures like *Udwartana* (herbal powder massage), *Vasti* (medicated enema), *Nasya* (nasal medication) and *virechana* (therapeutic purgation) were found to be beneficial in the management of *pakshaghata*. Previous study has reported significant relief on NIH-SS and on SS-QOL in stroke patients with integrated approach (conventional modern medicine with *Ayurveda* and physiotherapy).[6,7] The present case report deals with the efficacy of an *Ayurvedic* treatment in the management of post hemi craniectomy complications.

Udwartana procedure was selected initially to reduce the pedal edema and to achieve '*niraamavastha'*. *Abhayarishta* was used to relieve constipation and laxatives were stopped. Neeri tablets, *sheetaprabha* tablets were prescribed to tackle urinary tract infection whenever required. Palnsineuron capsules were prescribed for left shoulder pain and pain at left thigh (NSAID's were stopped). Cardocalm tablets were used to control hypertension (after stopping anti-hypertensives). *Maha yogaraja guggulu, Rasa rajeshwara ras, prasaranyadi kwatha* and *Dhanwantaram*101 *avarti* sofgels were prescribed for *vata shamana* (to pacify *vata dosha*) (Table 2).

Panchakarma procedures like *vasti* (*yoga vasti* and *kaala vasti* schedules), *nasya, patra pottali pinda sweda* (massage with the bolus prepared by medicinal leaves and herbal powders), *sarvanga abhyanaga* (full body oil massage), *bashpa sweda* (steam in steam chamber) and *udwartana* were implemented according to the requirement and condition of the patient. *Takra dhara* (pouring medicated butter milk over forehead) and *shiro pichu* (keeping cotton over the head which is dipped in medicated oil) (Figure 2) were implemented to tackle aggressiveness, sleeplessness and irritability. Patient has also received physiotherapy treatment along with *panchakarma* wherever feasible (Table 2).

On NIH SS, good relief was noticed in left upper and lower extremity function. Baseline score (11.07.2016) on NIH-SS was 7 which was improved to 3 at the time of second assessment (21.03.2017). There was 57.1% of improvement was found on NIH-SS. On SS-QOL, maximum relief was noticed in items like, energy levels, mobility, personality, mood and upper extremity function. The baseline score on SS-QOL during initial assessment was '91' (11.07.2016) which is improved to '167' during second assessment (21.03.2017) (which denotes 83.5% relief). Patient was able to climb the stairs without support at the time of discharge and able to do his routine works with ease. Pedal edema got reduced and constipation relieved. Left shoulder pain and left thigh pain were diminished, range of movement were improved in left upper and lower limb with reduced stiffness. Myoclonic jerks, focal seizures got reduced (frequency of once a week) with improved mood and quality of life. The recovery was promising and worth documenting.

Conclusion

Udwartana is effective in reducing the pedal edema in present case. Various *panchakarma* procedures like *vasti*, *nasya*, *patra pottali pinda sweda*, *bashpa sweda* are seems to be beneficial in improving the functioning / mobility in present case. *Shiro pichu* and *takra dhara* are effective in the management of aggressiveness / irritable mood and sleeplessness in present case. There is 57.1% relief on NIH-SS and 83.5% improvement found on SS-QOL in present case. *Ayurvedic* treatment seems to be promising in the management of post hemi craniectomy squeal.

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Conflicts of interest

Author declares there are no conflicts of interest.

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