



Effective Ayurvedic management of Diffuse Axonal Injury following severe Head injury- A Case Study

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Abstract

Background: *Diffuse axonal injury (DAI) is a very common form of blunt head injury. It is distinct form of head injury, occurring due to impact of external forces like acceleration/deceleration acting directly at the time of the trauma, and not produced by secondary changes like hypoxia, brain swelling or raised intracranial pressure. DAI is associated with sizeable mortality and morbidity. There is always some disability remained as a sequel on recovery from such injury.*

Case Study: *Here is a case study having DAI following severe head injury suffered in a road traffic accident and modern surgical line of treatment failed to treat the vegetative state but this challenging case was recovered completely on Ayurvedic line of treatment. It was a heartening finding that there was complete recovery without any disability.*

Conclusion: *This case study established that Ayurved is capable of playing important role in the recovery of such complicated cases and preventing deaths.*

Keywords: *DAI, Head injury, Shirobhighat, Vegetative state, Ayurvedic management.*

Introduction

Diffuse Axonal Injury is one of the most common and distressing types of traumatic brain injury and is a major cause of unconsciousness and persistent vegetative state after severe head injury¹. Diffuse axonal injury is in fact a histological diagnosis but clinically it may be defined as state of unconsciousness lasting for minimum 6 hours or more after traumatic brain injury (TBI), excluding cases of swelling or ischemic brain lesions^{2,3}. DAI is considered the most important factor in determining morbidity and mortality in victims of Traumatic brain injury and is the most common

cause of post-traumatic coma, disability, and a persistent neuro-vegetative state⁴. It has high mortality and poor outcome unless treated promptly.

This 28 years old male suffered head injury in a Road Traffic accident when his motorcycle slipped off due to striking to some stone on road on 17.8.2016 and was treated in one private hospital in Satara. Pt. had H/o loss of consciousness for 8 hours, H/o vomiting. He was transferred to Civil hospital Satara where tracheostomy was done & was transferred to Sassoon General Hospitals, teaching hospital of B.

J. Medical College, Pune for further management and was admitted to Surgery ward on 2.9.2016.

On admission, patient was conscious but not responding to external stimuli.

Afebrile, tracheostomy tube was in place. Pupils bilaterally equal and reacting to light. One contused and lacerated wound noted on lateral aspect of Rt. eyebrow of size-2 x 1 x 0.5 cm.

Pulse-88/min B.P. -104/66 mm of Hg.

Glasgow Coma Scale -E₄, V_T M₃=Score 7 T/10

CT scan findings on 2.9.2016

There is blood CSF level noted in occipital horn of Left lateral ventricle suggestive of Intra ventricular bleed. 4th ventricle also seen dilated. Paranasal sinuses showed mucosal thickening and collection in Sphenoidal sinus and Rt, maxillary sinus. Communicated fracture of anterior and lateral wall of Rt. Maxillary sinus, lateral wall of Rt. orbit and Rt. zygomatic arch.

USG abdomen did not reveal any injury to abdominal organs. No abnormality noted except fatty liver.

Patient developed Lt sided Hemiparesis, Rt sided involuntary hyperactive movements noted in Rt. upper and lower extremity. He was disoriented; in vegetative state. He had lost control of micturition and defecation. Case was referred to Neurologist who further referred the patient to Neurosurgery. Neurosurgeon advised weaning of Tracheostomy tube with continuation of same line of treatment.

Treatment received:-

Ryles tube feeding 200 cc 2 hrly.

TPR/B.P. monitoring

Inj. Ciprox 100 mg I/V BD

Inj. Eptoin 100cc I/V BD

Inj. Rantac 2cc I/V BD

Inj. Diclofenec 3cc sos.

There was no change in his general condition; Surgery department referred this case to Ayurved department for expert management. Patient was admitted in Ayurvedic ward on 8.9.2016.

Past history: No H/o head injury in the past. Pt. had one suicidal attempt by drinking insecticide 5

years back. H/o Pulmonary Kochs 2 years back and fully treated under RNTCP.

Afebrile, Pulse- 70/min, B.P. 110/70 mm of Hg. Pt. conscious, in vegetative state and not responding to any stimuli.

On admission to Ayurvedic ward:-

Pt was having Vam-Hasta-Pad-hanee (Lt. sided hemiparesis)

Dakshin Hasta-Pad kriya Aadhikya (Exaggerated involuntary movements on Rt upper and lower extremity).

Sarvang pitika- Rash all over body.

Loss of control over defaecation and micturition.

Treatment

Systemic treatment: Sitopaladi+ Avipatarik choorna 1TSF BD before meals along with warm water.

Ashwagandha (Withania somnifera)+ Bala (Cida cordifolia)+ Shatawari (Asparagus recemosus)+ Guduchi (Tinospora cordifolia) + Kavachbeej (Mucuna pruriens)+ Deodar (Cedrus deodara) choorna given in the dose 1gm BD with warm water

Tab Ekangveer rasa 1 BD

Tab Brihat vat chintamani 1 OD

Dashmool bharad kwath 1 cup BD

Jatamansi (Nordostachys) fant 40 ml H.S

Bramhi vati 1 BD

Panchkarma- Yogbasti: Niruh (medicated enema with Dashmool, Erandmool (Root of Recinus communis) and Punarnava (Boerhaavia diffusa)) - 350 ml

Anuvasan (medicated oil enema) by Sahchar/ Narayan tail 40 ml A/D

Majjabasti: When patient was stabilized, he was administered Majjabasti from 9.10.2016. Niruh-Anuvasan -Majjabasti administered in this order. Bone marrow of goat obtained by boiling long bones of goat+ Tikta ghrith+ Guduchi siddha kshirpak 100 ml administered by rectum every third day. Such 12 courses were administered.

Nasya (Naso-facial Ayurvedic massage) followed by 2 drops of Panhendriya vardhan tail in each nostril.

Pindswed (Moist heat treatment with cooked rice+ Udad dal in herbal drugs decoction made of Deodar, Ashwagandha+ Dashmool+ Guduchi.

Snehan (Oil massage by Bala tail) daily.

Shirodhara: Shirodhara (Pouring of liquid medicine with controlled steady flow on forehead for certain period) was started from 6.11.2016. Jatamansi - Bramhi- Dashmool siddha tail was used to administer Shirodhara started from 12 min on first day and increased by 3 min every day till 45 min and then in the reverse order reduced by 3 min every day till 12 min.

On 11th Sep 2016 (4th day on admission to Ayurvedic ward) tracheostomy tube was cleaned, collar changed daily.

On 12th Sep, Pt. gained control over defecation and micturition. Pt. had involuntary seizures on 16.9.2016. Neurologist increased the dose of Eptoin 100 mg morning and 200 mg H.S. Shiropichu with Kshirbala tail was given.

Ryles tube was removed on 23.9.2016.

The breathing became normal. On 25th Sep 2016 tracheostomy tube was removed.

SpO₂ -90% on admission, which was improved to 98% in due course of time. Patient became conscious and responsive within 4 days of Ayurvedic line of treatment; but he used to be violent and his hands had to be tied till he settled in next 10 days. He was disoriented and his memory was also impaired to the extent that he forgot the names of his own children.

The power in Lt. upper and lower extremities recovered gradually in 10 weeks of treatment. Physiotherapy was given for chest expansion-intercostals stretch, diaphragmatic facilitation; change of position every 2 hourly. Patient recovered completely within nearly 3 months of Ayurvedic treatment without any disability. He was discharged on 2.12.2016.

Discussion

Diffuse Axonal Injury occurs due to sudden trauma to the head by acceleration / deceleration/ rotation causing brain damage. Due to an impact injury of the brain in which there is diffuse

damage to the brain cells that causes severe deficit which can be physical, mental or emotional¹. The management of such individuals is a medical/ surgical emergency. Rita de Cassia Almeida Veira et al observed 78.6% mortality among persons with severe DAI and who received all possible advanced treatment⁴. Further this is a long-term challenge, since the brain damage affects the entire body and recovery may be possible with some permanent disability.

Head injury is termed as '*Shirobhighat*' in Ayurved. Granthkaras mentioned that, when there is *Chhardi* (Vomiting) following Shirobhighat it is termed as '*Pranavritta Udan*', when there is no control over micturition after head injury, termed as '*Pranavritta Apan*', if convulsions/ Aakshep occur it is termed as *Pranavrutta vyan* and when there is *Mandagni*, it is termed as '*Pranavritta Saman*'⁵. In the present case all of these were observed.

Pt. was treated by Ayurvedic drugs & some panchakarmas like, *Snehan* (body massage with medicated oil) and *Pindswed*, *Nasya*, *Basti*, *Shiro Pichu*, *Wran karma* etc. Brain is considered as *Sadya Pranhar Marma*. Granthkaras said, '*Vayu tantra-yantradharah*'. Therefore to pacify *Aghatjanya Vat-prakop*, *Vata chikitsa* was made. Chrakacharya mentioned that *Sneho anilam hanti* (Ch. si. 1/7) that means *Sneha* is the best *chikitsa* to pacify *Vata*⁶; therefore *Snehan*-(*Bahya & Abhyantar*), *Swedan* (*Pind*) was given. *Snehan* corrects *gati* of all *Vayus* & gives strength to body including all *indriyas* (Ch. Si.1/7)⁶. *Nasya* nourishes *Uttamang/ Brain* and it increases *Indriya & Manobala*. Further it decreases *Sanchit doshas*. This patient had communitated fracture of anterior and lateral wall of Rt. Maxillary sinus, lateral wall of Rt. orbit and Rt. zygomatic arch. Granthkaras have stated that '*Nasa hi shirso dwaram*' (Ch. Si.9/88)⁷. Therefore *Nasya* treatment was given. The best treatment of *Vata* is by *Basti chikitsa*. Therefore *Basti chikitsa* was given (*Yog basti & Majja Basti*). Due to all of this treatment *Pranavrutta Udan*, *Vyan*, *Saman* & *Apan* were corrected.

He was treated by Ayurvedic drugs -Jatamansi (Nordostachys) which acts on nervous system, by improving functions of brain/ Medhya, brings back consciousness, has potent action on preventing convulsions, gives strength/ *Balvardhak*, *Oaj-varadhak*, improves circulation, digestion, functions of urinary system, etc. *Bramhi* (Hydrocotyle asiatica) acts on *Raja & Tamo* doshas and it is termed as *Medhya* that prolongs life. It increases strength of nervous system particularly -brain and spinal cord; further it reduces *Unmad* having quiet effect on mental state. It is anticonvulsant /antiepileptic and antidepressant (*Avasad*). Ashwagandha (*Withania somnifera*), Shatavari (*Asparagus recemosus*), Bala, Guduchi (*Tenospora cordifolium*) are Rasayan dravyas that increased Dhatu-bala and particularly gave strength to brain by its Medhya properties. Therefore combined effect of all these drugs improved functioning of brain, brought the patient in the state of consciousness, prevented convulsions, improved his memory, quieted his mind. Shirodhara is mentioned to be highly useful in critical cases. It improves *Vacha*/ speech, stabilizes mind and gives strength to *Dhee*/ Intelligence, *Dhriti*/ To bring knowledge in to action and *Smriti*/ Enhancing awareness. When tracheostomy tube was removed, patient started talking incoherently, Shirodhara proved to be highly beneficial in restoring his mental state.

K.Rajgopal Shenoy & Anitha Shenoy mentioned in the textbook of Surgery that patients with diffuse axonal injury are not likely to survive⁸. In this case the patient had not only damage due to DAI but contusion & lacerations were also present as seen from intracranial fractures and the evidence of blood CSF level noted in occipital horn of Left lateral ventricle suggestive of Intra ventricular bleeding. Further, 4th ventricle was also seen dilated. All of these radiological findings associated with clinical findings of loss of consciousness, H/o vomiting, Loss of control of defecation & micturition, presence of vegetative state suggest very severe form of head injury. Modern surgery conservatively managed the

initial impact of head injury and Ayurveda managed the latter but most difficult part of restoration of condition of the patient to normal. The most heartening finding of this case study was that, recovery was complete without any disability.

Conclusion

This case study established that Ayurved is capable of playing important role in the recovery of such complicated cases. If Modern surgery and Ayurved both manage such cases as a team, most of such challenging cases can be treated well, preventing mortality as well as disability.

Conflict of interest- None

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