Original Research Article

Perspective study of neurological complications of surgery and anesthesia - A retrospective study

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Abstract

Background: Injury to central and peripheral nervous system is often permanent. As such adverse neurological outcomes of surgery and anesthesia can be devising for the patients. Hence type of surgeries risk factors outcomes of complications was studied. **Method:** 85 patients aged between 19 to 55 years old have different surgical intervention were selected for study. Anesthesia was given as per the convenient approach anesthesia was given as per the convenient approach intrathecally/ sub-durally **Results:** Post operative cerebral infarction was 3% in 25 patients. 5% post operative spinal cord ischemia in 25 patient's surgeries, 2% post-operative delirium complication in 25 surgery patients, 0.2% post operative visual loss in 10 surgical patients. **Conclusion:** Post-operative neurological complications are permanent and irreversible. This study appeals inventive parameters to indicate the prognostic complication during surgery and anesthesia.
Key words: Delirium, surgery, anesthesia, complications, ischemia, infarction.

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Email: kandianil@yahoo.com
Received Date: 07/11/2019 Revised Date: 18/12/2019 Accepted Date: 03/01/2020
DOI: https://doi.org/10.26611/10151316

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 17 January 2020

INTRODUCTION

Post surgical complications of CNS or PNS are devising. As a brain is in semi-liquid state. It contains millions of Neurons and neuralgias. Majority of the brain is supplied by end arteries. Hence A pinpoint or minute blockage may impair the body functions (conducting and Co-ordination) Once ischemia or infarction of brain tissue occur, it is irreversible and permanent acquired anomaly But in other organs have alternative instruments to compensate the functions like kindly(dialysis) Liver (transplantation) Lungs (oxygen), Skeleton (artificial joints).[1,2,3] Moreover there is no standard monitor for the brain or neural structures during surgery and anesthesia, while standard monitors for the cardiovascular and respiratory have been used routinely for decades. Hence attempt was made to study post-operative complications like delirium, spinal cord ischemia, post-operative visual loss, cerebral infarction so that this study a massage of thought for prediction of post- surgical neurological complication.

MATERIAL AND METHODS

85 patients aged between 19 to 55 years admitted at Mediciti Institute of Medical sciences Ghanpur, Medchal=501401, Telangana for various major surgeries.
Inclusive criteria- The patients undergoing cardio-vascular, traumatic, tumors of brain and spinal cord surgery were selected for study.

How to site this article: Anil Kumar Reddy K, Ramesh Babu Vedangi. Perspective study of neurological complications of surgery and anesthesia - A retrospective study. *MedPulse International Journal of Anesthesiology.* January 2020; 13(1): 29-31.
http://medpulse.in/Anesthsiology/index.php

Exclusion criteria – The patients who were under treatment of anti-psychotic, anti-epileptic and immune-compromised patients were excluded from the study.

Method- Every patients was investigated radio logically (CT/ MRI) Blood examination to rule out any previous diseases and certified by physician and cardiologist as fit for surgery were operated with sub-dural/ intrathecal anesthesia (which is suitable) consent for operation was obtained from close relative of the respective patients. The duration study was Dec-2018 to Sept 2019.

Statistical analysis- The various post-surgical complications were classified with percentage. The ratio of the male and female was 2:1

OBSERVATION AND RESULTS

Table-1 –Post operative cerebral infarction total number of patients 25, surgeries were open heart, (for valve replacement) carotid surgery, aortic arch surgery, cervical spinal surgery- The complication was 3%

Table 1: Post operative cerebral infarction (No of patients 25)

Sl.No	Name of Surgeries	No. of patients	%
1	Open heart (for valve replacement)	25	3%
2	Carotid surgery		
3	Aortic arch surgery		
4	Cervical spinal surgery		

Table-2 – Post-operative spinal cord ischemia- Total number of patients were 25 surgeries were traumatic, lumbar vertebral spondolysis, tuberculosis of vertebra, malignancy of vertebral column- percentage of complication was 5%

Table 2: Post-operative spinal cord ischemia (No of patients 25)

Sl.No	Name of Surgeries	No. of patients	%
1	Traumatic	25	5%
2	Lumbar vertebral spondylysis		
3	Tuberculosis of vertebra,		
4	Malignance of vertebral column		

Table-3-Post-operative delirium. The surgeries were head injury, open heart surgery, Lumbar spondylysis, fracture of vertebral column, fracture of thoracic wall percentage of complication were 2%.

Table 3: Post-operative delirium (No of patients 25)

Sl.No	Name of Surgeries	No. of patients	%
1	Head injury	25	2%
2	Open heart surgery		
3	Lumbar spondylysis		
4	Fracture of vertebral column		
5	Fracture of thoracic wall		

Table-4 Post-operative visual loss-Number of patients was 10. The surgeries were spinal cord, sub-dural hematoma, carotid; head injury percentage of complication was 0.2%.

Table 4: Post-operative visual loss (No of patients 25)

Sl.No	Name of Surgeries	No. of patients	%
1	Spinal cord	25	0.2%
2	Sub-dural hematoma,		
3	Carotid		
4	Head injury		

DISCUSSION

In The present study of neurological complications of surgery and anesthesia- 3% post-operative complication was observed in 25 surgeries- open heart surgeries (for valve replacement) carotid surgery, aortic arch surgery, cervical spinal surgery (Table-1) 5%– Post-operative spinal cordischemia was observed in 25 surgeries of traumatic, lumbar vertebral spondylysis, tuberculosis of vertebra, malignance of vertebral column(Table-2) 2% - Post-operative delirium. Was observed in 25 surgeries of head injury, open heart surgery, Lumbar spondylysis, fracture of vertebral column, fracture of thoracic wall (Table-3). 0.2% Post-operative visual loss was observed in 10- the surgeries were spinal cord, sub-dural hematoma, carotid, head injury (Table-4). These finding were more or less in agreement with previous studies[4,5,6]. The cerebral infarction is ischemic or hemorrhagic origin that occurs during or after surgery with post- operative time period up to 30 days. The cardiac surgery and carotid endartectomy are associated with the highest risk peri-operative stroke[7]. Peri-operative stroke have varying etiologies, stroke after cardiac surgery are most likely to the embolic[8]. Majority are the primarily ischemic as opposed to hemorrhagic. Spinal cord ischemia (SCI) is a potentially devastating complication associated with the surgical repair of thoraco-abdominal aneurysm and dissections. Immediate onset of SCI (Present on emergence from anesthesia) may cause interruption of the blood supply to the anterior spinal cord from both anterior spinal artery and multiple segmental ridicular (Inter costal) tributaries9. Delayed SCI resulting in partial or complete paraplegia has been reported several weeks after surgery. Delirium is an acute and fluctuating neurological disorder, that reflect a change from baseline cognition and is characterized by the cardinal features of inattention and deorganized thinking[10]. It is commonly observed in patients older than 60 years. It is associated mortality, persistent cognitive decline and prolonged intensive care and hospital length of stay. Post-operative visual loss (POVL) is rare but devastating neurological complication of elective surgery and can be caused by control retinal artery occlusion, (which is an end artery). Cortical

blindness and ischemic optic neuropathy (ION). The cause of POVL is diverse and can involve embolic phenomenon (occlusion of control artery and cortical blindness). It is suggested that, increased intra-ocular pressure will aggravate POVL. However the impact of these interventions on the outcome of POVL is unclear.

SUMMARY AND CONCLUSION

The present perspective study of neurological complication surgery and Anesthesia- This study indicates inefficient surgical and anesthetic approach because there is anesthetic neurotoxicity, neuroprotection, neural monitoring and neuronal bio-markers of injury are lacking. Hence such complication will impact on the clinical practice and possibly interrogated. This study farther demands neuroprotection, neural monitoring neural bio-markers of injury technologies to mitigate the risk of post-surgical complication.

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Source of Support: None Declared
Conflict of Interest: None Declared