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Research Article

**PREVALENCE OF MIDDLE VESSEL ASCULITIS AMONG
PATIENTS SUFFERING FROM TUBERCULOSIS OF CNS**¹Farial Javed, ²Adnan Faiz, ³Maheen Fatima¹Dera Ghazi Khan Medical College, D.G Khan.**Article Received:** August 2019**Accepted:** September 2019**Published:** October 2019**Abstract:**

Objective: The aim of this research work is to find the prevalence of the middle artery vasculitis in the patients suffering from tuberculosis of the central nervous system which is very rare and uncommon in this particular literature.

Methodology: This study was a prospective research work based on observations at DHQ/Teaching Hospital D.G Khan, from June 2016 to December 2018. (Only 4 patients appeared in the Hospital directly; among the other 4 patients, 3 were visitor of primary healthcare center which was not providing the facilities of admission so those patients admitted in Hospital and other the 1 patients were getting treatment from private institutes but patients were not able to fulfill the requirement of expenses of those hospitals so these patients also visited the Hospital).

Results: We analyzed a sum of total 8 patients suffering from TB of CNS who were present with stroke as an outcome of the middle artery infarction in all 8 patients. There were 4 male & 4 female patients with a range of age from 7 to 54 years. one participant was present with stroke at appearance and one patients developed after eight weeks of the treatment whereas other patients got stroke within one to four weeks. No patient was present with evidence of extraneural TB & 2 patients were available with the other factors of stroke which ruled out as a reason at that time for the stroke. Two patients were present with vasculitis of small artery in addition to the large stroke. One patient died, one patient got complete recovery and remaining eight patients were able to recover partially.

Conclusion: Though vasculitis of small vessel is the common complication of TB of central nervous system, vasculitis of middle vessel is common and it plays important role for the high rate of morbidity as well as mortality due to this particular complication.

Keywords: CNS, Vasculitis, Tuberculosis, Stroke, Infarction, Nervous System, Neurology.

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INTRODUCTION:

Pakistan is 8th among the twenty-two countries with high rate of TB in the whole world with a very high rate of mortality every year. TB meningitis is responsible for 3.18% patients of completely extra pulmonary complication and 0.68% of all testified patients of tuberculosis. In a research work conducted in America on extra-pulmonary TB, up to 10.0%

patients displayed involvement of central nervous system whereas data of CDC displayed that 6.30% of extra-pulmonary patients (1.30% of total TB patients) were present tuberculosis of central nervous system. In a research work conducted in Taiwan, 1.50% of tuberculosis deaths between 1999 & 2002 were attributable to the disease of central nervous system, a ratio that is high from past years.

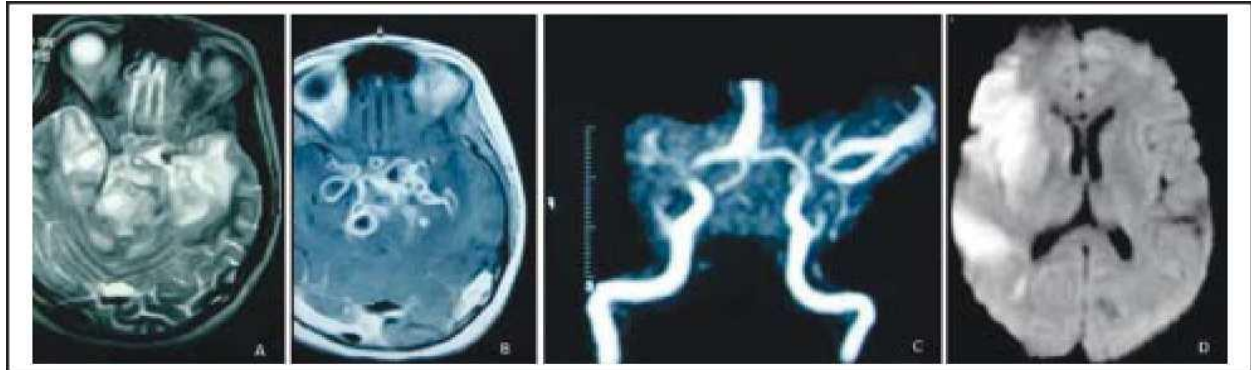


Figure 1: MRI-Brain of 18 year old girl.

TBM (Tuberculosis Meningitis) is fairly predominant & commonly identified in the tertiary health care centers in our country Pakistan. A current research work displayed a prevalence of 7.28% patients of TB of CNS, 3rd most common in their series of 100 patients of extra-pulmonary TB. Tuberculosis meningitis has association with the acute, subacute & late complications, among them, main reason behind the disability is the stroke. Cerebrovascular incidents appear in varied way and endure to advance during starting days of the therapy. The patients suffering from TB meningitis develop the complication of stroke in up to 4.0% to 39.0% patients, normally including the small, terminal branches of lenticulostriate, describing the typical & highly extreme distribution of infarctions in area of the basal ganglia.

METHODOLOGY:

We presented the information of 8 patients suffering from TB meningitis visiting us with different medical features who had stroke at the time of appearance or during the treatment. We carried out the detection of the TB meningitis on the basis of past history and medical check associating with abnormalities of CSF, MRI & MRA presentation. We performed the MRA for every patient and we carried out CT angiography for only one single person. The abnormalities of CSF measured comprised anomalous proteins, count of cells, low level of sugar and positive PCR for the Mycobacterium TB. We divided the stroke start from the appearance to more than eight weeks in six groups.

We excluded the patients having small vasculitis infarctions.

We included the patients with vasculitis infarctions & co-existing territorial infarctions. We also sought the proofs for the extra neural TB. We also noted the other complications related to the TBM. We assessed the patients present with the previous history of the stroke for the risks control. We provided conventional anti-TB treatment to all of our patients with the steroids for complete 8 weeks. We continued ATT for a duration of complete eighteen months, which was our routine for the TB of central nervous system. One patient died, 5 patients finished this duration and 2 patients were under treatment at the time of this report. Barthel index was in use for the assessment of the disability of the survived patients. We followed up all the patients except one who died SPSS V.15 was in use for the statistical analysis of the collected information.

RESULTS:

There were total 8 patients with TBM & coexisting medium cerebral vessel infarction. Male and female patients were equal in number. The range of the age of patients was from 7 to 54 years. All the patients were present with the clinical stroke associating with the MRI presentation infarcts. Patients were present with the increases protein of CSF and low level of glucose; only 2 patients were present with major neutrophilic pleocytosis & remaining patients had dominating lymphocytosis. Two patients appeared with the onset of the stroke, 2 patients developed the complication of

stroke within seven days of the onset of symptoms, 2 patients got stroke in first thirty days of therapy and 2 patients got stroke after eight weeks of treatment. Two patients were present with the vasculitis infarctions in addition to the infarcts of territory. Five subjects were present with association of mild to moderate hydrocephalus. The development of the clinical seizures carried out in five patients, one patient was

present with the EEG evidence of the activity of seizure & 2 patients were present with no clinical seizures and no activity of EEG. The imaging discovered the tuberculomas in three patients in addition with the meningitis. No patient was present with evidence of the active extra neural TB on examination, but single patient was present with the past history of the pulmonary TB in his adulthood.

Clinical characteristics of patients with Tuberculous Meningitis and MCA Infarction.

| Gender: | Evidence of extra-neural tuberculosis | Remarks |
|--|---------------------------------------|-----------------------------|
| M=4 | 0 | |
| F=4 | 0 | Previous hx of tuberculosis |
| Stroke onset: | 1 | (pulmonary, 20y back) |
| At Presentation=2 | 7 | |
| Within 1 week=2 | 2 | Other risks for stroke |
| Within 4 weeks= 4 | 2 | |
| After 8 weeks= 2 | 6 | |
| Type of infarct: | Outcome: | |
| MCA infarction: 8 | 1 | Expired |
| MCA infarction with small vasculitis infarcts: 2 | 7 | Survived |
| Seizures: | 4 | Moderate disability |
| Clinical seizures=5 | 2 | Mild disability |
| Subclinical seizures=1 | 1 | Complete Recovery |

Only two patients were present with the other factors of risks for the stroke as diabetes mellitus and hypertension. One patient with fifty-four year of age suffering from HTN & DM with adverse compliance of the treatment appeared with the acute onset weakness of the left side, was discovered to present with occluded cerebral artery of right side conforming infarction in that region. Patient got discharge after stabilization. Another patient with habit of smoking supported the etiology of TB. All the patients survived except one patient. We left the only 1 patient with mild disability issue & six patients with moderate disability and one patient got complete recovery from the complication. We are still following all the patient except one who died during the treatment.

DISCUSSION:

Lehrer demonstrated the angiographic triad in TBM which comprised hydrocephalic pattern, contraction of the arteries in brain & occlusion of the small & middle size arteries with the scanty collaterals. Vasculitis infarction is a method by which majority of the clinical abnormalities related to the neurology in the

tuberculosis meningitis occur & responsible for a considerable part of the frequently irreparable sequelae as the abnormalities of the hemiparesis, movements & seizures. The most of the infarctions in TBM are present in the base of ganglia, internal capsule as well as thalamus, & very infrequent in the main vascular region & stem of brain. This happens due to the involvement of the middle & small arteries. There is very less involvement of the capillaries & veins.

These results were also present in the findings of Ninan T when he elaborated the angiographic aspects in the TBM. The contribution of the vertebra-basilar system is not much common, though infrequently widespread infarctions in the dissemination of posterior arteries of cerebral cavity or abrasions of the small stem of brains may be under observations. There were variations in the onset of the stroke. In opposition to the research work conducted by Koh SB, who stated neutrophilic pleocytosis has high association with the stroke in the patients suffering from TBM. Only 3 patients of our research work were present with this

finding. The 6.0% rate of mortality was very near to the observation of Van Well who recorded a rate of mortality as 9.0% in the children of South Africa in a recent research work. A research work conducted in Spain stated a very high rate of mortality of 39.0% in the adult patients suffering from TBM.

CONCLUSION:

TB meningitis is possibly a deadly state linked with extreme morbidity, resulted by majority of its anomalies of which the much feared sequel is the stroke. Therefore, in time diagnosis & early treatment is much necessary.

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