



**ORIGINAL RESEARCH PAPER**

**General Medicine**

**STUDY OF SOCIODEMOGRAPHIC PATTERN, CLINICAL PROFILE AND OUTCOME OF PATIENTS OF MENINGITIS ATTENDING TERTIARY CARE CENTER AT GMC, BHOPAL-AN OBSERVATIONAL STUDY**

**KEY WORDS:**

sociodemographic distribution, clinical profile, observational study, Glasgow coma scale.

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**ABSTRACT**

**Background:** Meningitis continues to be one of the most serious causes of hospital admissions.  
**Objectives:** In this study we observed pattern of sociodemographic distribution & clinical profile and their relationship with outcome in patients of meningitis.  
**Methods:** Observational study, carried out on 150 patients having signs and symptoms of meningitis at GMC, Bhopal over period of April 2017 to September 2018.  
**Results & conclusion:** Most of patients belong to age groups of 21-30 years, out of them Maximum patients were female. Those who had Glasgow coma scale (GCS) score of <8, 8 patients had partial recovery whereas 31 had died & no one has complete recovery. & all patients belong to stage I of TBM had complete recovery, whereas in stage II only 12.5% had complete recovery & 5% had death, also in stage III, 13% had death.

**INTRODUCTION:**

Meningitis is a non-suppurative inflammatory disease of the dura mater and spinal cord meninges caused by tubercle bacillus.<sup>[1]</sup> Tubercular meningitis (TBM) is most life-threatening form of extra pulmonary tuberculosis and is found to be the most common presentation of neuro-tuberculosis. And early recognition of clinical features and sociodemographic status is important key for a successful outcome. The clinical manifestations of meningitis are Fever, convulsion, headache, neck stiffness, vomiting, and loss of consciousness though common in meningitis, they are by no means pathognomonic of the infection.<sup>[3,3]</sup> In developing countries, resource-poor regions not recognizing these clinical features resulting in late presentation and often unfavorable outcome. Tubercular meningitis has an insidious onset and may have atypical clinical manifestations. Thus, it is usually in its advanced stage when it is diagnosed, which results in a poor therapeutic efficacy and often causes severe extrapulmonary tuberculosis with high mortality.<sup>[4]</sup>

**MATERIAL AND METHODS:**

Observational hospital based study conducted at Hamidia hospital affiliated to GMC, Bhopal. All the patients aged >12 years and presenting with signs and symptoms of meningitis (i.e. Fever, Headache, Vomiting, and Neck Rigidity) at the time of admission were included.

On the basis of CSF findings, cases were divided into two subgroups acute meningitis (those having short history of illness and CSF shows mainly polymorphs cell type & ADA <10) and chronic meningitis (those whose CSF findings shows lymphocytic predominance and has ADA >10), assuming all the cases of chronic meningitis to be tubercular (in India), detailed history and examination was recorded and as per British medical research council (BMRC), TBM patients are divided into three stages<sup>[5]</sup>

**Statistical analysis:** All the data analysis was performed using IBM SPSS ver.20 software. Frequency distribution and cross tabulation was used to prepare tables. Categorical data is expressed as percentage.

**RESULTS:**

A total of 150 cases participated in the study.

**Table 1 :** shows Out of 150 cases most of the patients belong to age groups of 21-30 years [54 (36%)] followed by 10-20 years [51 (34%)] and 41-50 years [21 (14%)], out of them Maximum patients were female [85 (56.7%)] followed by male

[65(43.3%)], Level of consciousness revealed that most of the patients were conscious [66 (44%)] whereas 52 (34.7%) were in semi coma. 32 (21.3%) patients in present study were in comatose state. out of 150 patients of meningitis 49 (32.7%) had seizures. only 79 (52.7%) patients shows Kernig/ Brudzinski's sign, Cranial nerve involvement was seen in 72 (48%) of patients. And Most common cranial nerve 6 [50 (33.3)] was most commonly involved in present study, followed by cranial nerve 3 [(in 16 (10.7%) patients)] and fundus examination shows papilledema in only 33(22%) of meningitis. out of 150 of meningitis 42 (28%) shows focal deficit on admission and on further investigations all of them found to be tubercular meningitis. And on presentation 39 (26%) have GCS < 8, 47 (31.3%) lie in the range of 8 to 12, 64 (42.7%) of patients have GCS >12.

**Table 2 & figure 2** shows that out of 150 patients, maximum patients had GCS >12 [64 (42.7%)] whereas 47 (31.3%) patients had GCS between 8-12. And on, Comparing GCS score with the present study outcome revealed that patients who had GCS score of <8, 8 patients had partial recovery whereas 31 had died. Out of 47 patients who had GCS between 8-12, 6 (9.2%) had complete recovery and 41 (75.9%) had partial recovery whereas out of 64 patients who had GCS >12, 59 (90.8%) had complete recovery and 5 (9.3%) had partial recovery (p<0.001).

**Figure 1:** Indicates outcome of patients of tubercular meningitis as per their BMRC stage on admission, Comparing the outcome with the stages of TBM revealed that all patients belongs to stage I had complete recovery, whereas in stage II only 12.5% had complete recovery, 82.5% had partial recovery & 5% had death, also in stage III 87% & 13% had partial recovery and death respectively, no patient had complete recovery in stage III, findings are highly significant with p<0.001.

**Table 1: Sociodemographic and clinical profile**

S.No.	Variable	Number	Percentage
1.	Age of the patient		
a.	10-20	51	34.0
b.	21-30	54	36.0
c.	31-40	19	12.7
d.	41-50	21	14.0
e.	51-60	4	2.7
f.	61-70	1	0.7
2.	Gender of the patient		
a.	Male	65	43

b.	Female	85	57
3.	Level of consciousness		
a.	Conscious	66	44
b.	Semi coma	52	34.7
c.	Coma	32	21.3
4.	Seizures on admission		
a.	Absent	101	67.3
b.	Present	49	32.7
5.	Signs of meningeal irritation- Kernig / Brudzinski's sign		
a.	Absent	71	47.3
b.	Present	79	52.7
6.	Cranial nerve involvement		
a.	Absent	78	52.0
b.	Present	72	48.0
i.	3 <sup>rd</sup> CN	16	10.7
ii.	6 <sup>th</sup> CN	50	33.3
iii.	Both 3 <sup>rd</sup> and 6 <sup>th</sup> CN	6	4.0
7.	Fundus examination		
a.	Papilledema present	33	22.0
b.	Papilledema absent	117	78.0
8.	Focal deficit		
a.	Present	42	28.0
b.	Absent	108	72.0
9.	GCS		
a.	<8	39	26.0
b.	8-12	47	31.3
c.	>12	64	42.7

Table 2: GCS score with outcome-correlation

		Outcome			Total	P value
		Complete Recovery	Death	Partial Recovery		
<8	Count	0	31	8	39	<0.001
	% within Outcome	0.0%	100.0%	14.8%	26.0%	
8-12	Count	6	0	41	47	
	% within Outcome	9.2%	0.0%	75.9%	31.3%	
>12	Count	59	0	5	64	
	% within Outcome	90.8%	0.0%	9.3%	42.7%	
Total	Count	65	31	54	150	
	% within Outcome	100.0%	100.0%	100.0%	100.0%	

Figure 1: Outcome of patients (TBM) vtz their BMRC staging

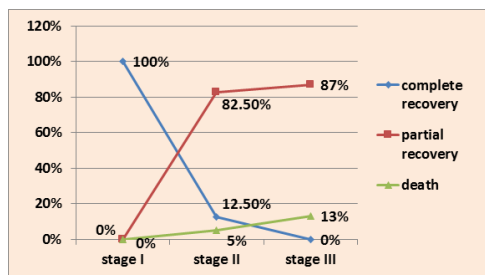
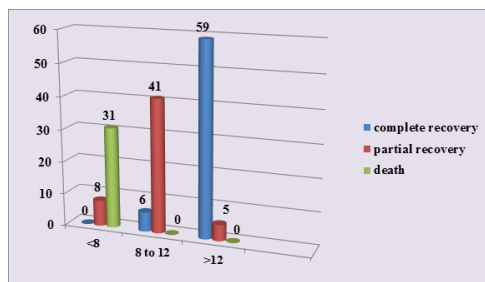


Figure 2 : Outcome of patients vtz their GCS score



DISCUSSION:

In our present study younger patients were more affected. Majority of cases (out of 150) i.e. 36% lies in the age group of 21-30 years of age, followed by age group 10-20 years of age i.e. 34%.

A similar study was noted earlier by **Amyan Yosry et al** shows that maximum patients lie between 18-40 years of age<sup>[6]</sup>

In our clinical study female (57%) are more affected than males (43%) . In this study out of 150 patients, Cranial nerve involvement was seen in 48% of patients and most common cranial nerve was 6<sup>th</sup> followed by 3<sup>rd</sup> **Lone et al** also reported that on clinical examination cranial nerve involvement was found in 55.73% of cases with the most common cranial nerve involved was III and VI<sup>[7]</sup> In present study comparing the outcome (i.e. during/within 2 weeks of hospital stay) revealed that patients who had GCS score of <8 , 8 patients had partial recovery whereas 31 had died. Out of 47 patients who had GCS between 8-12,6 (9.2%) had complete recovery and 41 (75.9%) had partial recovery whereas out of 64 patients who had GCS >12, 59 (90.8%) had complete recovery and 5 (9.3%) had partial recovery (p<0.001). similar findings are also shown by **lucas MJ et al**<sup>[8]</sup>

In present study comparing the outcome with the stages of TBM revealed that out of 34 Patients who had complete recovery, 29 (85.3%), 5 (14.7%) and 0 (0%) were in stage I, Stage II and Stage III respectively. Out of 53 patients who had partial recovery, 0 (0%), 33 (62.3%) and 20 (37.7%) were in stage I, Stage II and Stage III respectively. Out of 31 patients who died, 0 (0%), 2 (6.5%) and 29 (93.5%) were in stage I, Stage II and Stage III respectively with highly significance p<0.001. So mortality increases with advancement in staging. similar findings **Reports of Lone et al** showed that 5 of our subjects out of 61 died during the hospital stay within 4 weeks of presentation. Out of the five patients who died, three were in clinical stage III at presentation. So they had found that maximum mortality was seen in stage III meningitis (60%).<sup>[9]</sup> **Jacobs et.al** found that the mortality in patients admitted in stage III was approximately 50% while for those in stages II and I it was 30% and 15%, respectively<sup>[10]</sup>.

CONCLUSION:

Based on present study findings we conclude that meningitis is more common in young females. And involvement of cranial nerve is observed in most of the patients particularly CN 3. Most of them were found to be tubercular meningitis. Also patient's GCS on admission has a direct impact on outcome. So initial evaluation of patient on sociodemographic and clinical parameters will be helpful in decreasing mortality and improving prognosis in patients of meningitis.

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