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Other Foci of Infections in Community Acquired Central Nervous System Infections

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Abstract
The data related to the distribution of other focal infections in central nervous system (CNS) infection patients is inconsistent in medical literature. Infectious Diseases International Research Initiative (ID-IRI) has been carrying on multicenter and multinational studies since 2008 and provided bulk of information on pneumococcal meningitis, brucellar meningitis, tuberculous meningitis, and herpetic meningoencephalitis as the largest case series in the literature. In this study, the databases of ID-IRI studies were reanalyzed and one fourth of pneumococcal and brucellar meningitis patients, and slightly less than half of tuberculous meningitis patients had another focal involvement out of CNS. Herpetic meningoencephalitis had only 7% coexistent other focal involvement. Consequently, the treating clinician should not undervalue the presence of another site of involvement in a CNS infection patient. Hence, diagnostic and therapeutic interventions for other site of involvement in due course of CNS infectious diseases should seriously be taken into consideration.

Key words:

Meningitis; Encephalitis; Infection; Focus; Clinical

Abbreviations

PM: Pneumococcal Meningitis, BM: Brucellar Meningitis, TBM: Tuberculous Meningitis, HME: Herpetic Meningoencephalitis

Brief Report

The treatment strategies in central nervous system (CNS) infections have its own characteristics. Accordingly, the therapeutic approaches may require different features in the management infections other than the CNS disease. Thus, the clinical diagnosis of all infectious foci in a CNS infection patient is crucial in the management of the patient. Additionally, detection of the presence of a non-CNS focus may help predicting the causative agent of the disease in a CNS infection patient. To the best of our knowledge, the distribution of other focal involvement in this subgroup of patients is inconsistent in the literature [1-3].

Our clinical research group (Infectious Diseases International Research Initiative/ID-IRI) has been carrying on multicenter/multinational studies since 2008. ID-IRI has produced bulk of

information on pneumococcal meningitis [4], brucellar meningitis [5], tuberculous meningitis [6,7], and herpetic meningoencephalitis [8]. Among these CNS infection studies [5-8] are the largest case series ever reported in the literature. The strength of these studies was that all patients included were confirmed microbiologically and patients with presumptive diagnoses were excluded. Thus, the databases of ID-IRI for community-acquired CNS infection studies were reanalyzed to disclose patients with other foci of infections.

In this analysis, one fourth of pneumococcal and brucellar meningitis patients, and slightly less than half of tuberculous meningitis cases had another non-CNS involvement. Herpetic meningoencephalitis had only 7% of coexistent other focal involvement. Other than that 28 out of 506 TBM cases (5.5%) had presented a miliary pattern. In almost all patients with pneumococcal meningitis, the other site of involvement was the respiratory system. Acute sinusitis, acute otitis media, and pneumonia were most frequently seen in these cases in descending order. Similarly, the other site of involvement was the respiratory system in more than half of the patients with tuberculous meningitis. However, four-fifths of patients with brucellar meningitis experiencing another involved site had osteoarticular involvement. Finally, although relatively infrequent, herpetic skin eruptions comprised the majority of other site of involvement in herpetic meningoencephalitis cases (Table 1).

	PM	BM	TBM	HME
References	4	5	6,7	8

Total number of cases	306	294	506	496
Cases with other foci (n,%)	80	65	205	36
Percentage	26%	22.10%	40.50%	7.30%
Distribution of other foci	n/80	n/65	n/205	n/36
Respiratory System				
Pulmonary involvement	17 (21%)	2 (3.1%)	106 (51.7%)	1 (2.8%)
Pleurisy			8 (3.9%)	
Acute sinusitis	32 (40%)			1 (2.8%)
Acute otitis media	27 (33%)			
Chronic otitis media	2 (2.5%)			
Chronic mastoiditis	3 (3.8%)			
Chronic sinusitis	1			
Skeletal System				
Spinal involvement		8 (12.3%)	22 (10.7%)	1 (2.8%)
Bone-Joint involvement		45 (69.2%)	3 (1.5%)	
Skin				
Lymphadenitis			9 (4.4%)	
Skin involvement				28 (77.7%)*
Genital skin				3 (8.3%)*
Abdominal Organs				
Gastrointestinal		10 (15.3%)		
Peritonitis			3 (1.5%)	
Splenic involvement			1 (0.5%)	
Urogenital System				
Orchitis		1 (1.5%)		
Prostate involvement			1 (0.5%)	
Renal involvement			3 (1.5%)	
Adrenal involvement			1 (0.5%)	
Others				
Subdural empyema	1		5 (2.4%)	
Radiculopathy		2 (3%)		
PM: Pneumococcal Meningitis, BM: Brucellar Meningitis, TBM: Tuberculous Meningitis, HME: Herpetic Meningoencephalitis, *Herpetic eruptions				

Table 1: Foci of involvement other than the central nervous system.

In conclusion, another focus of infection is not rare in due course of community acquired CNS infections. Thus, the treating clinician should not undervalue the presence of another site of involvement in a CNS infection patient. Clues related to other focal involvements should particularly be chased in these patients.

Acknowledgments

The ID-IRI study group included all authors in the references [4-8].

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