

Epidemiological Study of Meningitis Cases Admitted to AL-Razi Hospital in Diyala Governorate for the Period 2000 – 2004

Abdulsalam H. Hassan (M.B.Ch.B,DCM,FIBMS)

Abstract

Background: Meningitis is an inflammation of the meninges (pia and arachnoids membranes) which covers the brain, it may be either a acute or chronic, purulent or a septic (sterile). Meningitis may be caused by infection with viruses, bacteria or other microorganism

Patients & method: A review of case records of patients with meningitis admitted to Al_razi hospital in Diyala governorate for the period the 1st of January 2000 to the 31th of December 2004 inclusive. Data were collected from the case records according to especial designed questionnaire. Analysis of the collected data was done and the results of this descriptive study presented by numbers and percentages.

Results: Meningitis was the first cause of admission (56.6%), meningitis more in males with M:F ratio 1.5:1, more than 85% cases occurred in those below 19 years age, most cases were rural residents (53.8%), more than 50% of cases reported in spring and autumn, meningitis reported mostly in students 72%, viral meningitis form 54.5%, case fatality rate was 6.3%.

Conclusion: Meningitis is the first common cause of admission and there must be a good efforts to decrease morbidity and mortality of this disease

Baquba teaching hospital / Diyala / Iraq.

Introduction

Meningitis is an inflammation of the meninges (pia and arachnoids membranes) which covers the brain, it may be either a acute or chronic, purulent or a septic (sterile) [1]. Meningitis may be caused by infection with viruses, bacteria or other microorganism and less commonly by certain drugs, [2]

The most common symptoms of meningitis are headache and neck stiffness associated with fever, confusion or altered consciousness, vomiting, photophobia, phonophobia. Some times especially in small children only non specific symptoms may be present such as irritability and drowsiness, rash is present it

may indicate particular cause of meningitis for instance meningitis caused by meningococcal bacteria may be accompanied by characteristic rash. [3]

Although meningitis is a modifiable disease in many countries the exact incidence rate is unknown [4]. Population wide studies have shown that viral meningitis is more common at 10.9 per 100000 [5].

There are significant differences in the local distribution of bacterial meningitis and the differences are expected to change further as vaccine against common strains are introduced [6]. For some causes of meningitis prophylaxis can be provided in the long term with vaccine or in the short term with antibiotic since 1980 many

countries have included immunization against haemophilus influenza type 13 in their.

routine childhood vaccination schemes [6] [7]. Similarly immunization against mump has led to sharp fall in the number of cases of mumps meningitis which prior to vaccination occurred in 15% of all cases of mumps [4]. Childhood vaccination with bacillus calmette Guerin has been reported to significantly reduce the rate of tuberculous meningitis but its waning effectiveness in adulthood has prompted search for better vaccine [6]. Short term antibiotic prophylaxis is also a method of prevention particularly of meningococcal meningitis [8] [9]. Meningitis is potentially life threatening and has a high mortality rate if untreated [10]. Delay in treatment has been associated with poor outcome [3]. Thus treatment with wide spectrum antibiotics should not be delayed while confirmatory test are being conducted [11].

Patients and Method

This is a hospital based study including a review of case records of patients with meningitis admitted to Al_razi hospital in Diyala governorate for the period the 1st of January 2000 to the 31th of December 2004 inclusive. Data were collected from the case records according to especial designed questionnaire, the collected Data included name, age, sex, residency, occupation, type of meningitis, date of admission and discharge, outcome of disease. Analysis of the collected data was done and the results of this descriptive study presented by numbers and percentages.

Meningitis cases form 56.6% (n:675) of the total admissions of cases with various infectious diseases during the study period (n:1194). Annual distribution of cases shows the highest number of cases were reported in 2002 as shown in table (1).

Meningitis occurred more in male than female with male:female ratio 1.5:1 as shown in table (2).

Distribution of cases in relation to age shows that more than 85.0% of meningitis cases occurred in those below 19 years age and more than 40.0% of those below 6 years age as in table (3).

Distribution of cases according to residency shows that most of cases were rural residents (53.8%) as in table (4).

Seasonal and monthly variations of cases show that more than 50% of meningitis cases occurred in spring and autumn, the number of cases shows two peaks in March (n:69) and September (n:78) as in figure 1,2.

Distribution of cases according to occupation after the exclusion of preschool children and housewives shows that meningitis reported more in students 72% as in table (5).

Distribution of meningitis cases in relation to age and specific aetiology shows that more than 56.0% of cases occurred in those above 5 years of age and the aetiology of meningitis was viral in 54.5%, pyogenic in 45% and tuberculous in 0.5% of cases as shown in table (6).

The case fatality rate of meningitis during the study period was (6.3%).

Table (1) : Annual distribution of meningitis cases during study period.

Year	No	%
2000	77	11.4
2001	96	14.2
2002	189	28
2003	153	22.7
2004	160	23.7
2005	975	100

Table (2): sex distribution of meningitis cases during study period.

Sex*	No	%
Male	410	60.7
Female	265	39.3
Total	675	100

Table (3): Distribution of cases according to age.

Ageyear	No	%
<1	137	20.3
1-5	157	23.2
6-10	150	22.2
11-19	160	23.7
20-64	53	7.9
>65	18	2.7
Total	675	100

Table (4): distribution of meningitis cases according to Residency.

Residency	No	%
Rural	363	53.8
Urban	312	46.2
Total	675	100

Table(5) : distribution of cases according to occupation*

Occupation	No	%
Students**	299	72
Unskilled laboror	51	16
Retired government- al employee	17	5.5
Farmer	15	4.7
Teacher	2	0.6
Police or military	2	0.6
Health personnel	2	0.6
Total	318	100

Table(6) : distribution of meningitis cases according to etiology and age.

age	viral		Pyogenic*		Tuberculous*		Total	
	No.	%	No.	%	No.	%	No.	%
neonatal period	5	1.4	3	1.0	-	-	8	1.1
	180	48.7	106	35.0	-	-	286	42.4
	184	49.9	194	64.0	3	100	381	56.5
Total	369	54.5	303	45	3	0.5	675	100

*Presumptive diagnosis made by direct CSF examination.

*neonatal period was excluded.

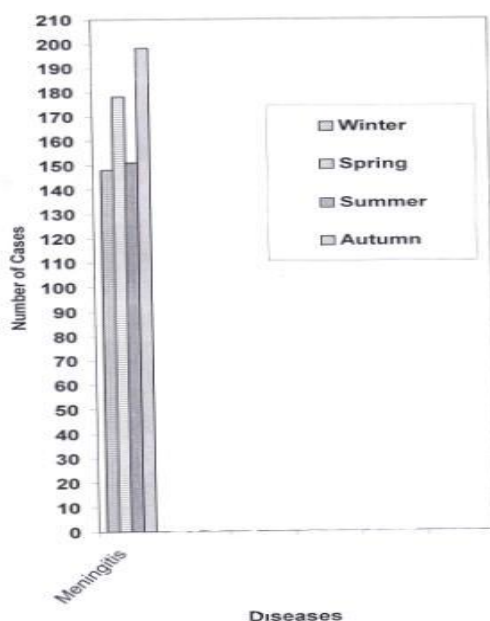


Figure (1): seasonal variation of various infectious diseases during the study period.

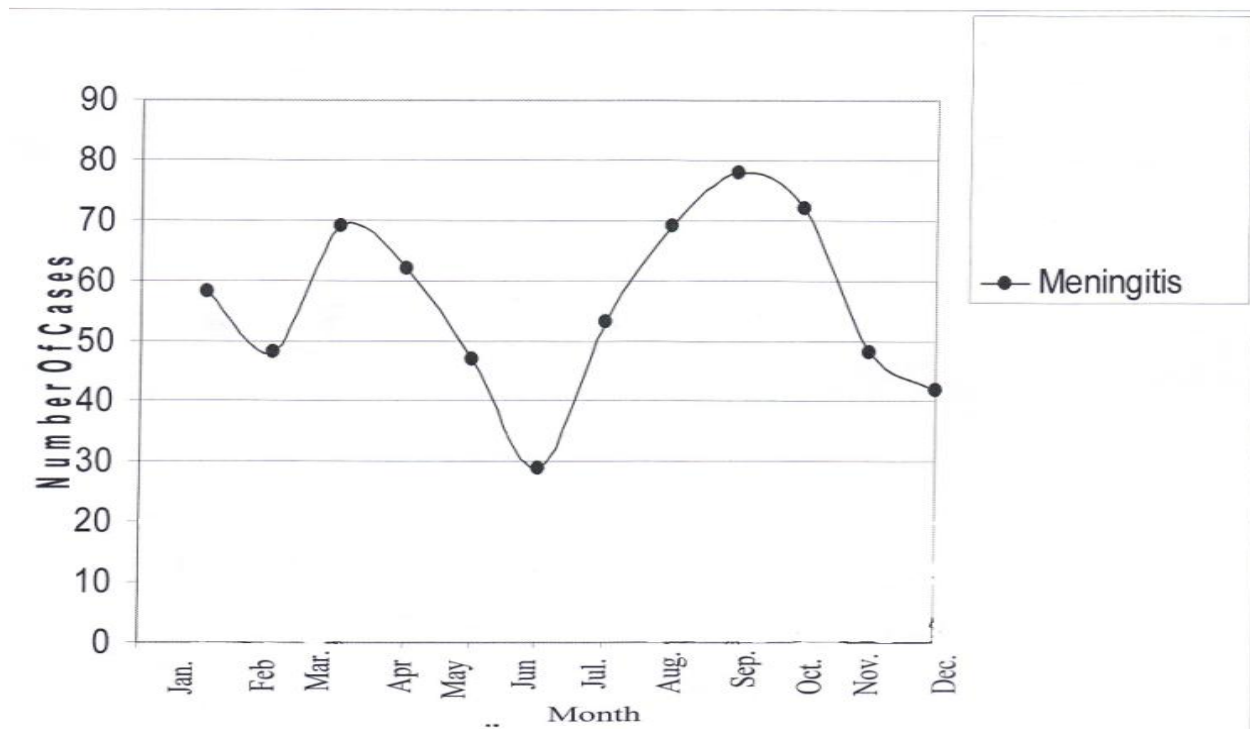


Figure (2): monthly variation of meningitis cases during the study period.

Discussion

In this study meningitis was the most common cause of admission, this could be explained that in Iraq meningitis is one of the important health problems causing a relative high morbidity [7]. This finding is higher than that reported in Tanzania [12] when meningitis formed 34% of hospital admissions.

Sex distribution revealed that meningitis is more in males and this finding is similar to other studies in Iraq [13, 14, 15, 16], by Abdulstarr, al_dulaimi, al_abassi and al_mawla who reported male preponderance with male:female ratio of 2:1, 1.8:1, 1.4:1 and 2:1 respectively among meningitis cases. Sex variation of this infectious disease could be attributed to the magnitude of agent host contact ship in addition to physiological factor influencing the degree of resistance [17].

Meningitis cases reported in the age below 20 years with children below 6 years formed 40% of cases, this finding agrees with studies in Iraq [13] and Saudi Arabia [18, 19, 20] where they reported 70%, 66.5%, 67%, and 74% respectively in the same age group. In this study the majority of reported cases were in rural areas which could be attributed to poor nutrition, low education, bad housing, deterioration of preventive health programmes and decline in the accessibility and quality of health services [21].

In this study most of cases were reported in students and this finding is similar to other studies in Iraq [13], Saudi Arabia [18, 20, 22], Pakistan [23]. Where they reported that the disease was more in school age and it could be explained by chance of exposure to infection and factors related to immunity states and physiological changes [17].

Most cases of meningitis cases were reported in spring and autumn with peak number of

cases in March and September and this could be explained by the effect of environmental factors i.e the low relative humidity and presence of dust which weakens the rhino pharyngeal barrier [13]. This finding agrees with studies in Iraq [14, 15] and Pakistan [23] where they reported peak of meningitis cases in the same season.

Most of meningitis cases were of viral type and less number of cases were that of tuberculous meningitis and this finding agrees with another study in Iraq [24], where they reported that viral meningitis forms 48.7% of meningitis cases. Viral meningitis was reported in those ≤ 5 years and > 5 years (mainly adults).

The low percentage of tuberculous meningitis during childhood ages could be attributed to wide range of BCG vaccination all over the country especially after application of the extended programme of the immunization (EPI) [24].

The case fatality rate of meningitis was 6.3% and this finding was lower than that of studies in Iraq [13] and Bulgaria [25] where they reported case fatality rate 12.9%, 10% respectively in meningitis.

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