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RELAPSING FEVER IN GONDAR, ETHIOPIA

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ABSTRACT

Objective: To determine the magnitude of relapsing fever, the rate of Jarisch-Herxheimer reaction (JHR) and its outcome and compare these parameters between adults and children in the same setting, time period and more or less similar management.

Design: A retrospective descriptive record analysis.

Setting: Gondar College of Medical Sciences (GCMS) hospital, paediatric ward and medical wards, northwest Ethiopia.

Subjects: Clinical records of 262 patients discharged with confirmed diagnosis of primary relapsing fever admitted between September 1995 and August 2000.

Results: Of the 13177 patients admitted during the study period, 262 (1.99%) had a primary diagnosis of relapsing fever of which 70.6% were males. Children below 14 years of age comprised 41.2%. Of the total admissions, 83.6% were from Gondar town and the rest from outside. JHR was observed in 31.7% of the patients. The overall case fatality rate was 4.6%. Bad outcome was observed more frequently in adult patients.

Conclusions and recommendations: Relapsing fever is still a public health problem. Because of the potential danger of the epidemic and its outcome it should not be neglected. Preventive programmes must be integrated with other services. Though the JHR is the most feared part of the management of relapsing fever, if health personnel are trained and competent, the management of relapsing fever can be delegated to the peripheral health workers, especially when it occurs in children. Moreover, the reason for bad outcome in adult patients than in children needs to be established.

INTRODUCTION

Relapsing fever is a recurrent acute episode of spirochaetemia and fever alternating with spirochaetal clearance and apyrexia(1-12). It mostly affects military and civilian populations disrupted by war and other disasters. The disease was common among slum dwellers, prisoners and other impoverished and over-crowded parts of the population(1,2). Louse born relapsing fever (LBRF) has disappeared over large regions of the world as improvements have been made in the standards of living, sanitation and hygiene. It is now an important endemic disease only in northeastern Africa, especially the highlands of Ethiopia(2,4,5,7). Ethiopia was incriminated as the source for the spread of the epidemics that has occurred in the neighbouring countries and the world during the second world war(2).

Outbreaks occurred in many parts of the country in 1991 and 1992(5-8). The displaced soldiers and people who had close contact with them were highly affected. The disease affects mostly homeless people, crowded together in unhygienic circumstances, especially during the cool rainy season, when it is more difficult for them to change and wash their clothing(2,7). During our clinical practice we were observing patients from the centre of Gondar town throughout the year. Because of the associated frequent reaction, it is a terrifying disease especially for

the health worker who is placed in a centre where admission and intravenous fluid administration is not possible. It is believed that the Jarisch-Herxheimer reaction in louse born relapsing fever patients is associated with a release of various cytokines into the plasma, including tumour necrosis factor, interleukin 6, interleukin 8 and C-reactive protein(1,2,3,9,11). These mediators of inflammation and fever most likely underlie many manifestations of relapsing fever, especially the complex series of pathophysiologic events that occur while spirochaetes are being cleared.

Most of these clinical observations are made on adults. Studies in children are scanty and are done in different setting and at different times to those in adults. Because of this it was difficult to make reasonable comparison in the outcome of illness and rates of reaction. Therefore, there is a need to determine the frequency of reported cases, Jarisch- Herxheimer reaction and their outcome between the adult patients and children, in the same setting, same time period and more or less similar management in the hospital. That is why it was found necessary to review the cases in both the adults and children.

MATERIALS AND METHODS

A retrospective case series analysis was conducted at the Paediatric and internal medicine wards in Gondar College of

Medical Sciences (GCMS) hospital in Gondar, northwest Ethiopia. The hospital is a teaching hospital and a referral hospital in the Amhara regional state. The hospital admits all types of patients who are referred from the health centres and health stations as well as self-referred patients. The hospital is serving as a second referral centre for the Amhara region and part of Tigray region.

Clinical records of all patients discharged with a confirmed diagnosis of primary relapsing fever, from September 1, 1995 to August 28, 2000 were retrieved using the record book of patients. Patients discharged after treatment for relapsing fever or who died while on treatment were selected. The available information from the records was recorded on a prepared proforma. Using these sources of information, data for 262 patients were collected. The information was entered in a computer. Analysis was made using Epi Info 2000 statistical package. Rate, frequencies and tables were used to summarise the results. Statistical tests like Odds Ratio and confidence intervals were applied whenever necessary.

RESULTS

There were 13,177 patients admitted in the two departments during the study period. Of these 262 (1.99%) were admitted with the diagnosis of relapsing fever (Table 1). They were confirmed cases. One hundred and eight (41.2%) were less than 14 years of age and the rest were 14 years and above. The majority, 185 (70.6%) were males. More than 83.6% of the patients were from Gondar town.

Table 1

Distribution of relapsing fever cases by age sex and address

Age group	Male (%)	Female (%)	Total %
0-7	29 (53)	26 (47)	55 (21)
8-14	35 (66)	18 (34)	53 (20.2)
15-30	107 (80.5)	26 (19.5)	133 (50.8)
31-60	14 (66.5)	7 (33.3)	21 (8)
Address			
Gondar town	162 (74)	57 (26)	219 (83.6)
Out of Gondar	23 (53.5)	20 (46.5)	43 (14.4)

Patients outside Gondar town had more JHR than those from the town, 46.5% versus 28.8% (Table 2). All patients had reported fever. The mean duration of fever before admission was 4.4 days. After admission all patients in both wards were more or less treated similarly. They had intravenous line fixed and made to run for few minutes, then procaine penicillin was given. Blood film was repeated the next day. If the blood film was positive, another dose of penicillin would be repeated. When there was no reaction or the reaction was transient, they were given chloramphenicol for seven days and tetracycline for three days to children and to adults respectively. When there was a reaction associated with complication, specific and supportive management related to the type of complication was provided. JHR was anticipated in both adults and children. Of the total, 83 (31.7%) developed the reaction. More JHR was observed in adults than in children, 65 (42.2%) versus 18 (16.7%) (Table 5).

Table 2

Distribution of JHR of relapsing fever cases by age, sex and address

Age group	Male		Female		Total	
	JHR (%)	No JHR	JHR (%)	No JHR	Total JHR (%)	Total PTS
0-7	3 (10.3)	26	6 (23.1)	20	9 (16.4)	55
8-14	6 (17.1)	29	3 (16.7)	15	9 (17)	53
15-30	40 (37.4)	67	16 (61.5)	10	56 (42.1)	133
31-60	6 (42.9)	8	3 (42.9)	4	9 (42.9)	21
Address						
Gondar	44 (27.2)	118	19 (33.7)	38	63 (28.8)	219
Out of Gondar	11 (47.8)	13	9 (45)	11	20 (46.5)	43

Table 3

Outcome of relapsing fever patients who developed JHR

JHR	Outcome		Total
	Died(%)	Improved (%)	
Spontaneous JHR	5 (25)	15 (75)	20
Induced JHR	7 (11.1)	56 (88.9)	63
Total	12 (14.5)	71 (85.5)	83

Table 4

Mean duration of fever before presentation and hospital stay of patients with relapsing fever

Category	Mean duration of fever (days)		Mean hospital of Stay (days)	
	Mean	SD	Mean	S.D
Children <14	3.7	2.4	3.2	4.9
Adult 14 and above	4.6	2.7	3.7	2.7
Induced JHR	4.1	2.4	3.5	3.8
Patients with spon. JHR	6.7	3.6	3.8	2.9
All patients	4.4	2.6	3.5	3.8

Table 5

Age group of patients with relapsing fever and JHR

Age group	JHR		Total
	Yes (%)	No	
Child<14	18 (16.7)	90	108
Adult ≥14	65 (42.2)	89	154
Total	83 (31.7)	179	262

OR=3.65, 95 CI=2.01 - 6.64

There were twenty cases of spontaneous JHR and all were observed in adults. These patients visited the hospital relatively late (Table 4). All JHR in children were observed after administration of antibiotics. Most of paediatric cases of relapsing fever were discharged early. Their mean hospital stay was 3.2 days. Adult patients stayed slightly longer. But patients who developed spontaneous JHR stayed longest. There were 12 (4.6%) deaths five of them

were those who developed spontaneous JHR. More deaths were observed in those who developed spontaneous JHR than those who developed JHR after drug administration (25% versus 11.1%) Table 3.

DISCUSSION

We have reported 262 cases of relapsing fever accounting for 1.99% of hospital admissions. This figure does not reflect the real burden of the problem in the region, because many patients (>50% of the population) have no access to health service. Even those who have access may not prefer to come to our service because of many reasons. They may visit drug vendors, pharmacies, local injectors or local healers. Moreover the blood film is positive only in 70% of the cases(2). The rest might have been treated for different diagnoses. Though it doesn't reflect the real burden of the problem, it indicates that it is still a public health problem in the country, especially in the region.

As reported in other studies(7-9) there was a male predominance, but it was not statistically significant. Most of the patients (86%) came from Gondar town. This might be due to geographical inaccessibility of the service to those who are living outside the city and presence of high-risk places in the town. The town is becoming highly populated by internal migration. As a result, there are overcrowded and unhygienic places, like church, schools and prisons in the town. These are areas known as foci for the occurrences and spread of relapsing fever (1,2,9,13).

JHR is the most feared complication of LBRF by health workers in our peripheral health institutions. They usually don't want to treat the patients at health centre level because of fear of complication, as there are reports of high level of reaction in other parts of the country(2,5,6,8,11). The level of JHR in adult patients was similar to that in Jimma and Assela(5,8). But JHR was low in children when compared to our adults and reports in children in other parts of the country(6,7). Reaction was also lower on patients who came from Gondar town than outside Gondar (28.8% versus 46.5%). The difference between our adult and paediatric patients was significant (OR=3.65, 95% CI=2.01-6.64). This might have been related to the duration of fever before they visited the hospital or to the difference in the level of cytokines, Interleukins and parasite concentration which are incriminated as responsible factors for the seriousness of illness(1,2,3,10). But it is not known whether the blood levels of these factors were higher in adults than in children. This requires further investigation.

The overall fatality rate in this study was 4.6%. The fatality rate in adults was higher than in children <14 years, (7.14 vs 1.9%) respectively. As in other studies, fever was reported by all patients. The mean duration of fever before hospital visit was 4.4 days. Patients with spontaneous JHR had stayed longer (6.7 days) before they visited the hospital. All were adults. Children were brought after a shorter duration of fever (3.7 days). This might be due to the importance given to fever as an indicator of serious disease

in children. We feel parents are more concerned when fever occurs in their children than in themselves.

Because of serious complications, patients stayed longer in hospital than expected. The longest was observed in patients who had spontaneous reaction. This was probably due to the fact that patients with spontaneous reaction were already seriously sick at admission. This required longer period of care to recover. The lowest duration of stay was observed in children (3.2 days). This figure would have been lower if it had not been due to patients who had other illnesses, which needed longer hospital stay.

CONCLUSION

Relapsing fever is still a public health problem in Ethiopia. Because of the potential danger of the epidemic and its outcome one cannot neglect it. Preventive programmes must be integrated with other services. Once patients are diagnosed to have relapsing fever they need urgent treatment with adequate preparation to combat the effect of JHR. Though the reaction is the most feared part of the management of relapsing fever, if health workers are trained properly and competent, the management can be delegated to the peripheral health workers. This might be more applicable when the disease occurs in children who are observed to have lower level of reactions and rare fatality under the existing medical practice in most of the reports from Ethiopia.

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