BRUCELLOSIS-AN UNDER-ESTIMATED CAUSE OF ARTHRALGIA & MUSCULAR PAINS IN GENERAL POPULATION

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Background: Muscular pains**,** arthralgias and arthritis are among the most common symptoms of the patients attending various OPDs and private clinics every day. While the symptoms could be due to a broad spectrum of the illnesses; the infection with Brucella, often overlooked, is one among such causes. The objective of present study is to determine the extent to which this infection contributes towards the presence of such symptoms, and how important it is to rule out this treatable cause in our society, before labelling and treating these as non-specific aches and pains. **Methods:** This prospective study was conducted on 280 patients at a registered medical specialist clinic between May 2006 and June 2008. The patients of each gender from age 15 years onwards having the symptoms of chronic muscular pains, backache, and arthralgias etc. were included in the study. The exclusion criteria were clear cut bone and joint diseases, connective tissue and systemic disorders. The patients were subjected to evaluation by history taking that especially looked into their involvement with cattle look-after and also the use of milk and other dairy items. The investigations included agglutination test for Brucella. The positive cases were treated and the results followed for satisfactory or mild responses. **Results:** Out of 280 cases 55 (19.64%) were suffering from infection with Brucella. The above patients had received non-specific treatment with analgesics or even steroids with no benefit. The young females outnumbered males, and rural cases had more incidence than urban; and there was a slight increase in those cases who handled the cattle at home as compared to those who did not. **Conclusion:** In absence of a good veterinary care of live stock in societies like that of Pakistan , it becomes important to rule out Brucellosis, before labelling the symptoms of a patient as simple, non specific aches and pains; and therefore depriving the patient of a treatable disease if he had one.

Keywords: Brucellosis, Myalgias, Arthralgias, Fever, Dairy, Cattle

INTRODUCTION

Brucellae are small gram negative rod-shaped, non motile bacilli that primarily harbour in animals .The disease is endemic wherever cattle, goats, sheep and other animals are raised in large numbers. Important endemic areas exist in Mediterranean zones, Central Asia, Mexico and South America.[1] The incidence of this disease world wide is greater than that of both bubonic plague and tularaemia. In the United States, however, it is not very common because cattle are immunised and milk is pasteurized.[2] Animal brucellosis is reported from practically every state of India.[1]

In Pakistan besides goat and sheep, the domesticated animals include cow and buffalo as well. These are raised for dairy and meat purposes, more so in rural areas but none the less in suburbs. The veterinary look after and care of these animals as compared to developed nations is almost negligible or even zero. The infected animals excrete Brucellae in the urine, milk, placenta and vaginal dischargers.[1]

The main supply of milk and other dairy products to the cities in Pakistan is certainly from the same source. The flow of infected milk and other dairy products from these sources to the entire society in our country is enormous. Besides, brucellosis is also an occupational disease of farmers, shepherds, butchers and those working in slaughter houses as well as in laboratory workers.[1–3] A proper occupational history alone may lead to the diagnosis in a majority of such cases.[4]

Among the four species of Brucella, the B. mellitensis causes the most severe disease and is enzootic (endemic in animals) in Central Asia, India (subcontinent), and Middle east.[5] Brucella infection in man can vary from acute febrile illness to a chronic, ill defined disease lasting for several days, months or even years.[1] Low back ache arthralgias or even arthritis of one or more big joints is common.[1] The symptoms may be continuous or intermittent and physical findings may be minimal.[6] Many cases remain undiagnosed either because they are unapparent or because physicians in many countries are unfamiliar with the disease.[1]

On the other hand, looking at the number of patients attending the medical and orthopaedic clinics every day for the treatment of multiple joint pains, arthritis, myalgias and associated fever etc, beyond doubt, constitutes a major fraction of patients.

The purpose of this study was to determine the extent, to which the brucellosis was responsible as an etiological factor in these patients.

MATERIAL AND METHODS

This prospective study was conducted on 280 consecutive cases, in a registered medical specialist clinic for almost two years from May 2006 to June 2008. The cases included in the study were those who

attended the clinic for the treatment of the following signs and symptoms:

1. Constitutional symptoms like, weakness, low grade fever, exhaustion
2. Arthralgias
3. Active Arthritis
4. Myalgias
5. Fever (PUO)
6. Unexplained Hepato-Splenomagaly
7. Lymph adenopathy

The criteria for the exclusion were the cases with the above symptoms but having a clear-cut underlying pathology like various bone and joint diseases, connective tissue and rheumatic disorders as well as fever of other aetiologies.

The work up included taking of detailed case history as per a pre-designed proforma of questioner, the lab investigations that besides ruling out other possible conditions, included especially the world wide used serological Brucella agglutination test.[5] applied to all the patients for both B. melitensis and B. Abortus.[7] The cases with positive test were singled out and treated for the illness. A combination of Rifampin and Doxycycline which is considered convenient and is currently popular[8] was applied to all initially. Those patients who tolerated the drugs without any side effect, continued the treatment for 6 weeks , which is considered advantageous over short term treatment.[9] However, those, who developed drug induced hepatitis with Rifampin were given Streptomycin and Cotrimoxazole for 3 weeks.[6] The observations noted were based upon the number of positive agglutination cases, their gender and age distribution; their belonging to rural or urban areas; the type of Brucella present, and also their involvement with domesticated cattle. Finally the cases treated were followed up for the response to treatment.

RESULTS

A total of 280 patients were included in the study. Their age-wise distribution is given in Table-1.

Out of the total, 56 (20%) males and 90 (32.14%) females were from rural while 52 (18.57%) males and 82 (29.29%) females were from urban areas. Out of these, (172 female and 108 male), the infection with Brucellosis was found to be present in 55 (19.64%) cases, attending for various complaints mainly arthralgias, myalgias, and constitutional symptoms. The male:female ratio was 1:2.51 (Table-2).

Out of the 55 positive cases, 34 (61.82%) had cattle at home and 21 (38.18%) had no cattle at home. In 54.54% of cases both Brucella Abortus as well as B. Mellitensis were positive. B. Abortus alone was positive in 14.54% of cases, and B. Melitensis alone was positive in 30.90% of cases (Table-3).

The constitutional disturbances and myalgias were most common symptoms (Table-4) and active Sacro-ilitis was seen in 4 patients which accounted for 7.27% of cases.

Rifampcin and Doxycyclin given for a period of 6 weeks helped in 44 (89.79%) cases, and a mild or questionable response in 5 (10.21%) cases (Table-5). Six cases were Rifampin sensitive who developed hepatitis. In these cases, Co-trimoxazole and Streptomycin was employed for 3 weeks.[6] Among these, 1 case complained of continuation of symptoms at the end of 1 month.

Table-1: Age-wise Distribution of Patients (n=280)

Age group	Cases	%
15–24 years	15	5.35
25–34 years	66	23.57
35–44 years	70	25.00
45–54 years	54	19.29
55–64 years	60	21.43
>65 years	15	5.36
Total	280	100

Table-2: Gender Distribution of Brucella Positive Cases n=280

Sex	Total Number of patients	Brucella Positive	%
Males	108	11	10.18%
Females	172	44	25.58%

Table-3: Bacteriological types of Brucella Agglutination Positive Cases n=55

Type of Brucella	Cases	%
Brucella Abortus Alone	8	14.55
Brucella Mellitensis Alone	17	30.91
Brucella Abortus & Mellitensis Positive cases	3 0	54.54
Total No. of Positive cases	55	100

Table-4: Clinical symptomatology among Brucella positive cases

Symptoms	Male n=11	Female n=44
Constitutional	7	32
Fever PUO	3	9
Myalgias	6	40
Arthralgias	2	28
Arthritis	2	3
Hepatsplenomegaly	3	11
Lymph adenopathy	0	2

(Note: the total number of positive cases was 55; however most of the patients suffered from more than one symptom)

Constitutional symptoms & fever were common in both sexes. However, arthralgias and active arthritis were present predominantly in females. Characteristic involvement of Sacroiliac joint was found in a number of cases.

Table-5: Response to Specific treatment (n=55)

Drug Regimen	Cases	Satisfactory/ Moderate	Mild/ questionable
Rifampin+Doxycyclin for 6 weeks	49	44	5
Cotrimoxazole+Streptomycin for 3 weeks	6	5	1

DISCUSSION

Common symptoms like myalgia, back ache, vague joint pains and low grade prolonged fever takes lot of patients everyday to seek medical advice. Most of the times they are labelled as non specific, and therefore are being treated by non-specific analgesics and even steroids. This in turn can lead to the well known side effects like peptic ulceration and hypertension etc. Our study has shown that about 1/5th of such patients could be having a treatable disease, i.e., brucellosis. Since the most striking aspect of clinical picture is the severity of the illness and the absence of clinical signs[1] which is often underestimated and overlooked. In addition many physicians are not aware of the disease.[1] The recognition of this infection is all the more important in a society like that of Pakistan, where the care of domesticated animals is almost zero. In industrialised and developed countries in which food hygiene prevents food borne brucellosis, the disease is largely present in males between the ages of 20 and 45 years due to their professional exposure than females.[10] In this study, young females were more often infected or at least more often symptomatic. This is consistent with the practices involved in raring of cattle at home by our females in the rural areas where the whole population including women and children are at risk.[10] This could be possibly due to more exposure to handle the cattle, and their milk and excreta in rural areas. The infection was more common in persons from rural areas, and certainly more common in those who raised the cattle.

Regarding the 55 cases that were recognised to have Brucella, more than half of the cases, were treated previously for relapse of typhoid fever a number of times, of course without any benefit. More than 35% of cases received treatment from bones and joints clinics and orthopaedic OPDs. There was no relief of symptoms in 82% of cases by non-specific analgesic therapy employed before the specific diagnosis.

Bone and joint involvement are reportedly present in 40% of cases.[10] This study showed such involvement in 70.45% of female cases, and 36.36% of male cases. A couple of cases were noticed, who before diagnosis, had received intra-articular steroid injections for their painful sacro-ilits. The recognition of this particular arthritis is important as it is particularly common in brucellosis.[10]

Arthralgias and muscular pains and aches are among the most common complaints of our patients, for the treatment of which they move from one place to other. Although the list of causes leading to such problems is a long one, yet among these, brucellosis is one such which is often overlooked, ignored, and not taken usually into account. The present study clearly shows that this infection is one of the most important treatable causes, which must be excluded always in such cases. Young females have shown particular susceptibility to this infection.

This study, on one hand implies importance of consideration of this disease to we the professionals, including physicians, orthopaedic practitioners as well as gynaecologists. On the other hand it highlights the importance of providing a good veterinary care to the domesticated animals.

The author plans to convey to the concerned ministry of live stock to look into the programmes to improve the veterinary care. Besides this, the author suggests that the common masses should also be made aware, through electronic and print media, of importance of proper handling and boiling of the milk in their day to day life. Proper preventive care, pasteurisation or proper boiling of milk could reduce the incidence of this illness.[1] As for as the live stock is concerned, vaccination has been a cornerstone of the successful brucellosis control program in the united States.[11] As of April 2003, 48 states were considered brucellosis free.[12] Recently launched live vaccine of B. abortus strain 19-BA is reportedly advocated for human use.[1]

CONCLUSION

It is concluded that Brucellosis is not very uncommon in cases of arthralgias being treatable and it must be considered in differential diagnosis in a community where cattle are raised without proper veterinary care.

There is need to create awareness in masses who are engaged in cattle farming and milk and dairy consumers.

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