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Original Research Article

Clinical profile of rheumatic patients with infectious complications

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ABSTRACT

Background: The objective of the present research was to study clinical profile of rheumatic patients having infections including correlation of infection with different parameters and DMARDS and to study incidence pattern of various infections.
Methods: All patients of various Rheumatic diseases with infections who fulfil inclusion criteria who were enrolled in this study. Duration of study was six months. A total of 300 patients where studied out of which 50 were cases and the rest were control.
Results: Incidence of infection was high in extremes of age. Overall incidence of infection was slightly higher in females. Infection rate was 16.66%. Incidence of infection was highest among vasculitis group. Kidney was the most common organ involved. Incidence of infection was more in patients having anemia and leukopenia. Tuberculosis was the most common infection found in Rheumatic patients.
Conclusions: Infection was more common at extremes of age and more common in females. SLE was most common disease encountered while kidney was most common organ to get involve in disease process. Patients with anemia and leukopenia had statistically significant incidence of infections. Tuberculosis is most common infection encountered in Indian rheumatic patients.

Keywords: Clinical profile, CYC cyclophosphamide, DMARD's Disease modifying antirheumating drugs, Infectious complications, Rheumatic patients

INTRODUCTION

Infections are quite common in patients with rheumatic diseases. These are leading causes of death and disability of patients. Infectious agents have been linked directly and also indirectly to a number of acute and chronic inflammatory rheumatic diseases.[1] Rheumatic condition itself is a risk factor for susceptibility of infection due to involvement of Immune system and likelihood of affecting almost any tissue in body. Use of new disease modifying antirheumatic drugs (DMARD's) with immunosuppressive effects is further addition to risk. All rheumatic patients should be aware of potential risk of developing infection in their lifetime.[2-3]

Authors have studied the clinical profile of patients presented with infection including disease activity at presentation, number of systems already involved, the antyrheumatic therapy patient was receiving and the outcome of treatment directed towards treating the infection. This study will help to assess risk of infections at various disease activity levels (determined by laboratory parameters) and doses of antirheumatic therapy and thus will guide us to optimize the treatment.

This study will help in early diagnosis and effective management of infections in these patients.

Objectives

- To study incidence pattern of various infections and to analyze detail clinical profile of rheumatic patients having infection and to correlate incidence of infection with clinical, biochemical and immunological parameters.
- To correlate incidence of infection with various diseases modifying antirheumatic drugs (DMARD's)

METHODS

A cross-sectional study was carried out amongst patients of clinically diagnosed rheumatic conditions having infections in IPD Department of General Medicine of IIMSR Medical College, Badnapur, Jalna, Maharashtra during the period of January 2016 to August 2017. All patients of various rheumatic diseases with infections who fulfill inclution criteria were enrolled in the study. Each patient has undergone routine investigations and special investigations like ANA, anti-ds DNA, C3, C4, CRP, ACLA-IgG/IgM, 24 hours urinary proteins. Those without infection were taken as controls. Duration of study was one year. A total of 300 patients were studied out of which 50 were cases and the rest controls.

Inclusion criteria

Age group of patients was 13-65 years for both cases and controls.

Case

Clinically diagnosed case of rheumatic disease (as per American college of rheumatology criteria) having infection and requiring admission. Cases without infection.

Exclusion criteria

- Infections not requiring admission
- Disease flare
- Age <13 or >65 years.

Outcome Measures

Results were compared according to following parameters:

Disease activity at presentation.

1. Number of systems already involved in disease process.
2. The antirheumatic therapy patient was receiving.
3. The outcome of treatment directed towards treating the infection

Study methods

All patients who fulfill inclusion criteria have undergone basic investigations to come to a diagnosis as per routine protocol of hospital these were correlate with signs and symptoms of patients and thus diagnosis was established.

Statistical analysis

Data was entered in Microsoft Excel and results were analyzed in the form of percentage and proportions whenever appropriate. Chi-square test was also used to assess and analyze the data

RESULTS

As shown in Table 1 that incidence was seen in patients with age 51 yrs and above where 6 out 17 studied patients had infection (35.29%). It was followed by age group 13-20 with 20.27% incidence showing that incidence of infection was higher in extremes of age. Overall percentage of infection was almost same in both sexes but slightly higher in females. Incidence of rheumatic disease as well as infection is higher in females as compare to males.

Table 1: Age and gender wise distribution of incidence of infection.

Age Group	Infection	Total patients	Percentage
13-20 yrs	15	74	20.27
21-30 yrs	13	114	11.40
31-40 yrs	10	59	16.94
41-50 yrs	6	33	18.18
51+ yrs	6	20	35.29
Gender			
Male	5	41	12.20
Female	45	259	17.37
Total	50	300	

Table 2: Incidence of infection in various rheumatic conditions.

Disease	Infection	Total patients	Percent
S.L.E.	24	141	17.02
Systemic sclerosis	5	44	11.36
Rheumatoid arthritis	5	22	22.72
Ankylosing spondylitis	0	20	00.00
MCTD, polymyositis, dermatomyositis	3	19	15.78
Wegeners and ANCA associated vasculitis	2	6	33.33
Miscellaneous	11	48	22.92
Total	50	300	16.66

As shown in Table 2 that incidence of infection was highest in Wegeners and p-ANCA associated vasculities

group (33.33%) where 2 out of 6 patients had infection followed by rheumatoid arthritis (22.72%). Incidence was above mean in Systemic lupus erythematosus. In systemic sclerosis patients had lesser infection rate (11.36%) where only 5 out of 44 had infection. Infections were remarkably absent in patients of ankylosing spondylitis.

Table 3: Organ involvement and infection.

System	Infection	Total patients	Percentage
Kidney	14	80	17.50
CNS	02	25	8.00
CVS	02	04	50.00
GIT	01	02	50.00
Total	19	111	17.12

Amongst 111 patients who had organ involvement 19 where found to have infection. (17.12%) and Kidneys were most common to get involve (17.50%) (Table 3).

Table 4: Role of anemia in infection.

	Infection	Total patients	Percent
Patient with anemia	44	219	20.09
Without anemia	4	58	6.90

It was seen from Table 4 that incidence of infection was higher (20.09%) in patients with anemia where 44 out of 219 hade infections as compare to 6.9% in non-anemic patients in whom only 4 out of 58 had infection. This higher infection rate amongst anemic patients was statistically significant with p value of 0.018.

Table 5: Role of leucopenia in infection.

	Infection	Total patients	Percent
Patient with leucopenia	11	26	42.3
Without leucopenia	36	245	14.7

As seen from Table 5 that amongst 26 patients with leucopenia 11 had infection (42.3%) whereas only 36 out 245 non leucopenic patients had infection (14.7%). This raised infection rate in leucopenic patients was statistically significant (p value 0.001).

Table 6: Raised ESR and infection.

	Infection	Total patients	Percent
Patient with ESR 30 or more	23	130	17.70
With ESR <30	3	36	11.54

Incidence of infection was high in patients with raised ESR (17.7%) as compare to those with normal ESR (11.54%). But it was not statistically significant (Table 6).

Table 7: Complement levels and infection.

	Infection	Total patients	Percent
Low C3	14	78	17.95
Low C4	11	44	25
Normal C3 and C4	20	63	15.87
Total SLE	24	141	17.02

It was seen from Table 7 that patients with low complements level had increased % of infection. SLE patients with ACLA had increased % of infection (18.91%) whereas those with normal levels had negligible infection (2%). Patients with low proteinuria >500mg/24hrs had increased incidence (20.45%) with 9 out of 44 having infection. Amongst routine area <500mg/24 hrs group general incidence patients was 14.71% (5 out of 34).

Table 8: Role of DMARD's in infection.

Drugs	Infection	Total patients	Percent
Steroids	42	224	18.75
Cyclophosphamide	15	121	12.40
Methotrexate	8	61	13.12
Azathioprine	6	38	15.79
CYC+ steroid	15	107	14.02
AZA + steroid	6	36	16.66

It was seen from Table 8 that steroid was highest in terms of both numbers of patients receiving treatments and incidence of infection also. Cyclophosphamide was second most commonly used but had least incidence of infection. Incidence of infection during steroid treatment was higher in smaller tapering doses (11-40mg) as compared to higher initiating doses (41-80) doses. Amongst CYC sub-groups patients on bimonthly regimen had increased incidence (20%) of infection as compared to monthly (11.11%) and 3 monthly (10.26%) regimens. Amongst Azathioprine treated group patients on 50mg dose had increased incidence of infection (33.33%) whereas patients on 100 mg dose had no reported cases.

Infection sub types

Out of 50 patients with infection 24 (48%) where found to have tuberculosis. Amongst tuberculosis patients pulmonary tuberculosis was commonest (54%) joint tuberculosis (21%) was next common infection. Incidence was lowest for spin tuberculosis (4%).

DISCUSSION

The present study shows that all rheumatic patients gives a fair idea about effect of age, gender, disease type, organ involvement, treatment protocol and lab parameters on incidence of infection. Authors have studied 300 rheumatic patients in our hospital, divided them into two groups, one with infection and other without infection

and then studied above parameters, tried to correlate then with incidence of infection. Incidence of infection was high in extremes of age. Incidence of rheumatic disease was found to be slightly higher in females as compare to males.

Like most of previous studies where incidence of infection in various diseases was 15-50%, present study has average infection rate of 16.66%.[4] Patients with SLE form bulk in both infection and non-infection and hence their incidence closely resembled to average value. Incidence was highest among vasculities group suggesting role of stasis and other factors like cytokines which favor bacterial growth for infection. Strikingly for unknown reasons none of the patients admitted with ankylosing spondylitis had infection. The difference in drugs of infection amongst various rheumatic conditions was statistically not significant.[5,6]

In present study, kidney was most commonly involved organ and reflected the average rate of infection. CVS and JIT involvement was rare. Increased incidence of infection in patients with anemia and leucopenia was statistically significant indicating highest susceptibility and need of prompt treatment in these easily correctable conditions. Raised ESR is commonly used as a predictor of disease activity of almost all rheumatic diseases. Raised ESR was associated with increased incidence of infection but it was statistically non-significant. Complement levels and anticardiolipin antibodies are parameters of SLE activity. Low C3, low C4 and high ACLA IgG/IgM were associated with increased incidence of infection.[7-9] Proteinuria indicates renal involvements in SLE patients and can be used as parameter of disease activity. Patients with significant proteinuria (>500mg/24hrs) had increased incidence of infection. Incidence of infection during steroid treatments was higher in tapering doses 11-40mg. CYP group had least incidence of infection amongst various DMARD's. amongst CYP sub-groups patients on bimonthly regimen had increased incidence of infection 20% as compare to monthly 11.11% and 3 monthly (10.26%) regimens.[10]

In present study, tuberculosis was the most common infection found in rheumatic patients with incidence of 8%. Out of a total of 50 patients with infection 24 were found to have tuberculosis (48%). Pulmonary tuberculosis was commonest TB subtype closely followed by joint tuberculosis. In present study amongst non-TB group local infections (including skin, muscle and soft tissue) topped (35%). Respiratory tract infections ranked second with 31%. Urinary traced infections were not reported in our study probably representing early and widespread use of antibiotics for treating urinary complaints on OPD basis.

CONCLUSION

Infections were common at extremes of age and slightly more in females as compare to males. SLE was most common disease encounter while kidney was most common organ to get involve in disease process. Patients with significant proteinuria should be promptly treated. Slight increase in infection rate associated with steroid use is statistically non significant. Hence one should not hesitate uses of steroids. Because advantages of steroid use outweigh small risk of infection. Short duration of CYC that is bimonthly regimen was associated with higher incidence of infection compare to long duration regimen. Tuberculosis is most common infection encountered in rheumatic patients. Among tuberculosis group pulmonary koch's accounts for 54% of cases. Hence regular screening of rheumatic patients by simple means like chest X-ray should be done. Amongst non TB group local infections involving skin, soft tissue, muscles and superficial veins are commonest closely followed by various respiratory tract infections. These conditions should be readily diagnosed and promptly treated. Hit hard, early and effectively should be the approach while treating infections.

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