PAPER

Infections in Rheumatology Department

Professor Chit Soe, M.B.,B.S., M.Med.Sc(Int.Med), MRCP(UK), FRCP(Edin), Dr.Med.Sc(Gen.Med), Dip.Med.Edu.[1]
Dr. Khin Lei Lei Aung, M.B.,B.S., M.Med.Sc(Int.Med), MRCP(UK)[2],
Dr. Chomar Lwin, M.B.,B.S., M.Med.Sc(Int.Med), MRCP(UK), Dr.Med.Sc(Gen.Med)[3],
Dr. Lei Lei Htay, M.B.,B.S., M.Med.Sc(Int.Med),[4],
Dr. Yin Min Soe, M.B.,B.S., M.Med.Sc(Int.Med), MRCP(UK)[5],
Dr. Phyu Phyu Han, M.B.,B.S.,[6]

Infections are the major cause of morbidity and mortality in rheumatology practice. They are responsible for 30–50% of the morbidity and mortality in patients with systemic lupus erythematosus (SLE), and infections rank as the first or the second largest cause of death[1]. In cohorts of patients with rheumatoid arthritis, infection is typically the second or third most common cause of mortality[2]. Patients are prone to infections not only because of the inherent immunological abnormalities of the diseases but also due to immunosuppressive therapy. The presentation is often subtle and atypical because of the immunocompromised state and sometimes indistinguishable from the underlying disease especially in connective tissue diseases like lupus, thus delaying the diagnosis and treatment. Infection affects the natural course, disease manifestations, progression, and clinical response, and also limits the level of immunosuppression to be induced to keep the underlying disease in remission.[1]

1. *Professor and Head, Rheumatology Department, 500 bedded Specialty Hospital*
2. *Specialist Medical Officer, Rheumatology Department, 500 bedded Specialty Hospital*
3. *Consultant, Rheumatology Department, 500 bedded Specialty Hospital*
4. *Consultant, Rheumatology Department, 500 bedded Specialty Hospital*
5. *Specialist Medical Officer, Rheumatology Department, 500 bedded Specialty Hospital*
6. *Medical Officer, Rheumatology Department, 500 bedded Specialty Hospital*

MJCMP 2015, **19(3)**, 16-19.

OBJECTIVE

- To identify the site of infections and common pathogenic organisms in the Rheumatology Department.
- To study the antibiotic sensitivity patterns of pathogens in Rheumatology Department.

MATERIALS AND METHODS

It was a hospital based cross-sectional descriptive study and conducted from May to October 2014 in Rheumatology Department, 500 bedded Specialists Hospital. Patients who had active infection were identified based on clinical features, serological markers and positive culture results. Medical records were also reviewed and cases were divided into systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), systemic

sclerosis (SS), seronegative arthritis and other rheumatology disorders. Similarly, they were recorded for nature of infection, causative organisms and antibiotics to which the pathogens were sensitive. Data was then entered and analyzed using Epi-info version 7.

RESULTS

There were a total of 887 admissions over a six month period in Rheumatology Department. Sixty one percent were systemic lupus erythematosus (SLE) patients, 15.55 % were systemic sclerosis patients, 5.41 % were rheumatoid arthritis patients, (0.58%) were seronegative arthritis patients and 16.91% fell in the others group. There were 119 culture positive infections during this period and infection rate was 11.72%. Various sites of infections are mentioned in Figure 1. Respiratory tract infections were commonest (49.58%) followed by skin and soft tissue infections (21.85%), urinary tract infection (15.13%) and septicemia (10.92%). Skin and soft tissue infections included boils, cellulitis, ulcers and single to multiple deep intramuscular abscesses which are rarely seen in immunocompetent patients. (Figure 1)

Regarding organisms isolated, *Klebsiella* species were most frequently identified among all specimens (24%). It was closely followed by *Staphylococcus* (19%), *Pseudomonas* (16%), *E.coli* (11%) and *Acinetobacter*, *Moraxella* and *Streptococcus* (4% each) respectively. (Figure 2)

As to organisms isolated from sputum, *Klebsiella* species was the predominant pathogen (34%). Second and third commonest pathogens responsible for chest infection were *Staphylococcus* and *Pseudomonas* (14% and 10% respectively). (Figure 3)

Organisms cultured from skin and soft tissue infections were *Staphylococcus* (38%), *Pseudomonas* (31%), *Klebsiella* (12%) and others (19%). *E.coli* was the most common causative organism in urinary tract infections (28%). *Pseudomonas, Klebsiella* and *enterococcus* made up 17% each of the urinary tract infections. Blood culture was positive for *Staphylococcus* (23%), *E.coli* (15%), *Pseudomonas* (15%), *Sphingomonas* (15%) and others [31%). *E.coli* (50%) and *Klebsiella* (50%) were detected from stool specimen in cases of gastroenteritis.

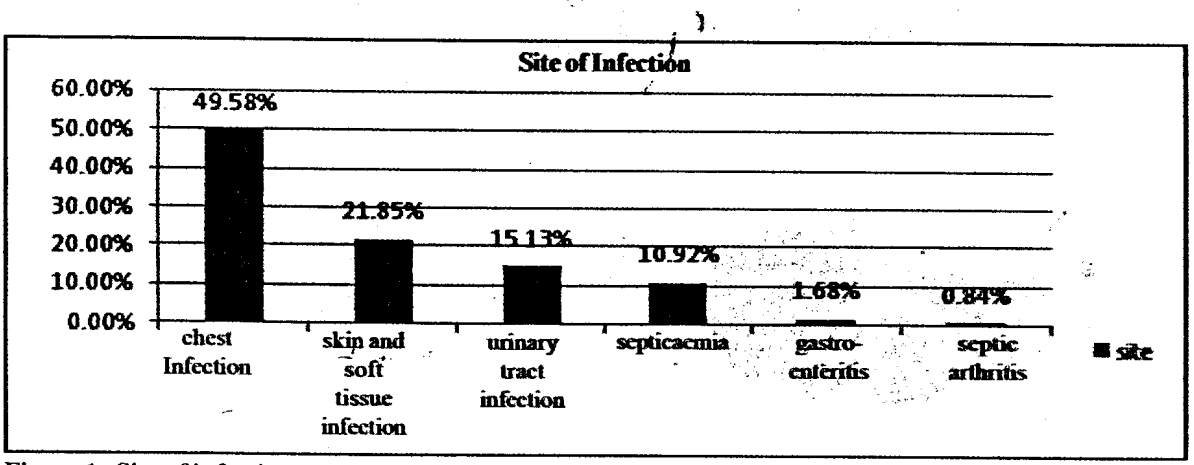

Figure 1. Site of infection

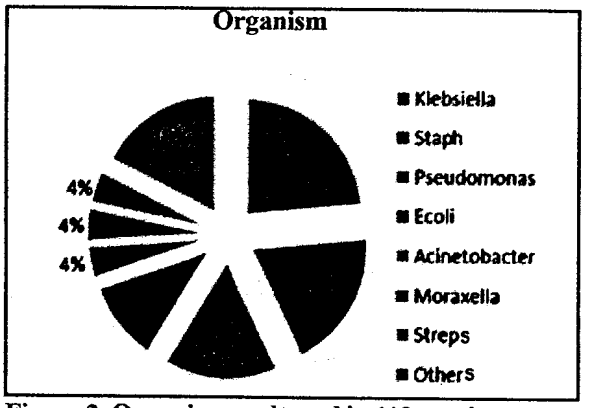

Figure 2. Organisms cultured in 119 specimens

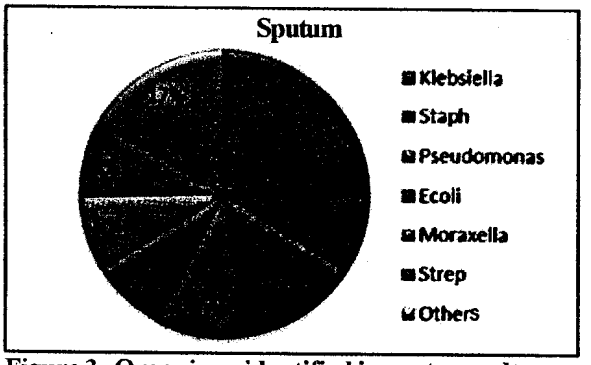

Figure 3. Organisms identified in sputum culture

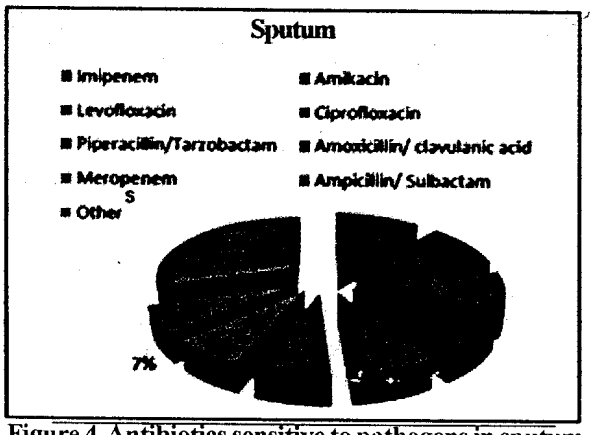

Figure 4. Antibiotics sensitive to pathogens in sputum

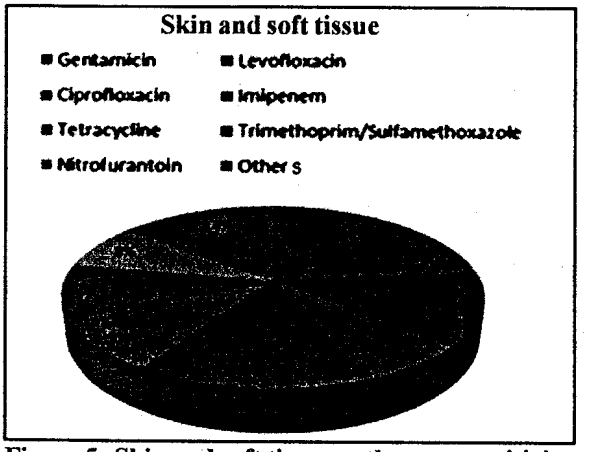

Figure 5. Skin and soft tissue pathogens sensitivity to antibiotics

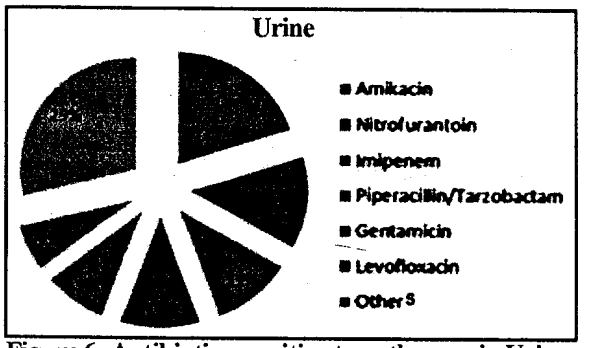

Figure 6. Antibiotics sensitive to pathogens in Urine

When it comes to antibiotic sensitivity results, organisms isolated from respiratory tract infection was sensitive to imipenem and amikacin (11% each), levofloxacin (10%), ciprofloxacin (9%), meropenem, amoxi cillin- clavulanic acid and ampicillin-sulbactum (7% each). (Figure 4)

As for skin and soft tissue infection, Gentamycin was found to be most effective for that condition (24%), followed by levofloxacillin (13%), ciprofloxacin (12%), imipenem (11%). (Figure 5)

All the bacteria isolated from urine showed highest sensitivity to amikacin (20%). Nitrofurantoin (13%), imipenem (11%) and

piperacillin-tazobactum (11%) was the other major antibiotic to treat urinary tract infection. (Figure 6)

Antibiotics active against blood borne infections were gentamicin (16%), amikacin and levofloxacin (14% each), ceftriazone, imipenem and tetracycline (11% each).

DISCUSSION

Infections and rheumatology have strong association both in disease pathogenesis and flares. In this study, respiratory tract is the most common site of infection which is also consistent with other studies.[1,3]. Predisposing factors for these fatal infections may be prolonged immobility as a result of myopathy, arthritis, and aspiration during seizures in case of lupus cerebritis. Therefore it is recommended for all patients with connective tissue disorders on immuno-suppressive drugs to receive immunization against influenza and pneumococci, and effective chest physiotherapy is also crucial. Skin and soft tissue infections comprise the second commonest infection identified. Difficulty in maintaining personal hygiene and in performing daily activities due to hand deformities, joint pain and muscle pain, might predispose to skin infections. Urinary tract infections account for third most common cause of infection. This could be due to poor function in micturation.

The most common microorganism infecting patients with connective tissue disorder is *Klebsiella*. Other common organisms responsible for chest infection, skin and soft tissue infections, urinary tract infections are *Klebsiella, Staphylococcus* and *E coli*. So, familiarity with the likely infections will aid in selection of appropriate clinical specimens. Furthermore, the knowledge of antimicrobial pattern of commonly isolated pathogens may provide guidance to clinicians regarding the empirical treatment of infections when therapy must be started before laboratory reports are available. In addition, according to this study, amikacin, gentamycin, imipenem and amikacin show highest sensitivity for urinary tract infection, skin and soft tissue infection and chest infection. Less common use of quinolones and aminoglycosides to conserve for treating multidrug resistant tuberculosis, and high cost of cabapenems have to be taken into consideration.

CONCLUSION

Infections are not uncommon in immuno-compromised rheumatology patients and cause significant burden to patients, families and health care system. It is absolutely vital for the clinicians caring for these patients to acquire information about infections, causal pathogens and antibiograms.

REFERENCES

1. Irlapati RVP, Nagaprabu VN, Suresh K, Agrawal S, Gumdal N.(2011). Infections in rheumatology practice: an experience from NIMS, Hyderabad. *Indian Journal of Rheumatology*; 6:25-30.
2. Franklin J, Lunt M, Bunn D, Symmons D, Silmon A.(2007). Risks and predictors of infection leading to hospitalization in a large primary-care-derived cohort of patients with inflammatory polyarthritis. *Ann Rheum Dis*; **66**:308-312
3. Chen JI, Tsai WP, Wu YJJ, Luo SF, Ho HH, Liou LB, Chen JY, Kuo CF, Chang HC, Yang CH, Yu KH.(2010). Infections in polymyositis and dermatomyositis: analysis of 192 cases. *Rheumatology*; **49**:2429-2437.