Clinical presentation of tuberculosis in HIV positive patients in relation to CD4 counts


1, 5, 6 Kathmandu University Teaching Hospital, Dhulikhel, Kavre, Nepal.
2, 4, 3 Kasturba Medical College, Mangalore, Karnataka, India.

ABSTRACT

Introduction: The study was conducted with an aim to assess and compare various clinical presentations of tuberculosis in HIV positive patients and compare these presentations in relation to CD4 counts.

Methods: This prospective observational study was conducted in Kasturba Medical College (KMC), Mangalore from September 2004 to July 2006 with 100 proven HIV positive patients with Tuberculosis. NACO and RNTCP guidelines were used for diagnosis of HIV and tuberculosis.

Results: Out of 100 patients, 25% of the patients had pulmonary tuberculosis (PTB) and 75% had extrapulmonary tuberculosis. Among the extrapulmonary tuberculosis, majority (30%) had Lymph node TB followed by disseminated TB (17%), tubercular pleural effusion (12%), Miliary TB (6%), tubercular meningitis (4%), intestinal TB (3%), and TB pericardial effusion (3%). Among the patients with PTB, 65% were sputum smear negative for Acid Fast Bacilli (AFB). Upper lobe infiltration was evident in patients with high CD4 count. As the CD4 cell count declined, chest x-ray showed middle and lower lobe infiltration.

Conclusion: In our study, clinical presentation of tuberculosis remained highly dependant upon the CD4 cell count. In HIV patients with higher levels of CD4 count, the clinical presentation of tuberculosis remained fairly similar to those without HIV infection. However, in more immunocompromised patients, as evidenced by low CD4 counts, presentation was atypical. Hence there should always be a high index of clinical suspicion for the accurate and timely diagnosis of tuberculosis in HIV positive patients.

Key Words: HIV/AIDS, tuberculosis, CD4

INTRODUCTION

When acquired immunodeficiency syndrome (AIDS) was first recognized in early 80s, few would have predicted that it would escalate into a modern day plague, with over 50 million individuals infected worldwide. According to the estimation of UNAIDS, in the year 2003, almost 5 million people were newly infected with HIV/AIDS worldwide and over 20 million people have died since the first case of AIDS were identified in the early 80s.

Correspondence:
Dr. Arun Sedhain Lecturer, Department of Medicine, Kathmandu University Teaching Hospital Dulikhel, Kavre, Nepal. E-mail: asedhain@yahoo.com
According to WHO estimate, 11 people around the world get infected every minute with this deadly virus and nearly 15,000 new infections occur daily, of which 90% are in developing countries.

Tuberculosis is the most common opportunistic infection in patients with HIV in our part of world\(^1\). It remains as a major public health problem even today especially in the developing world. Each year 3 million people, worldwide, die from the disease. There is a two-way relationship between the HIV and the tuberculosis i.e. both of the diseases help the progression of one another.

Clinical presentation of TB in HIV infected persons varies considerably depending upon the severity of immunosuppression. In patients with earlier stages of HIV infection, clinical presentation of TB tends to be similar to that observed in patients with immunity. However with suppression of immunity, as reflected by low CD4 counts, the propensity of extrapulmonary tuberculosis supervenes. Furthermore, the investigation findings in the TB patients with HIV infection might not be as typical as found in the non-HIV patients.

Taking this fact into consideration that there remains a wide variation in clinical presentation and investigation findings of Tuberculosis in HIV positive patients depending upon the stage of disease and level of immunosuppression, it is now obvious that in addition to the investigation findings, high index of clinical suspicion holds an important role in the diagnosis of Tuberculosis in the HIV infected individuals.

The study was conducted with an aim to assess and compare various clinical presentations and symptomatic manifestations of tuberculosis in HIV positive patients in relation to CD4 counts.

**MATERIALS AND METHODS**

The present study was a prospective observational study conducted in the Department of medicine, Kasturba Medical College, Mangalore from September 2004 to July 2006. Hundreds HIV positive patients with Tuberculosis, who satisfied the inclusion criteria, were the subjects of this study.

Proven cases of HIV infection (proved according to NACO guidelines) with documented evidence of TB anywhere in the body were included in the study. HIV positive patients with a high clinical suspicion of TB without documented evidence, but who improved on empirical therapy with anti-tuberculosis treatment (ATT) for one month were also included\(^2\). However, Patients who were already on anti-tubercular treatment and Patients for whom CD4 count could not be done were excluded from the study.

All HIV positive patients with tuberculosis (both pulmonary and extra pulmonary), satisfying the inclusion criteria, were registered in the study group. Diagnostic criteria as per NACO (National AIDS Control Organization) guideline was followed to diagnose a case of HIV and all the patients were tested and found to have positive results at Voluntary Counseling and Testing Center (VCTC). Patients were diagnosed to have Tuberculosis as per NACO and RNTCP (Revised National Tuberculosis
Control Program) guidelines. X-ray of chest and sputum examination for AFB were used to diagnose a case of pulmonary tuberculosis (PTB). Lymph node tuberculosis was diagnosed as per lymph node FNAC results. Erythrocyte sedimentation rate (ESR) was done in all patients. Ultrasound of abdomen, Tuberculin (montoux) test, and relevant tests like pleural and ascitic fluid analysis and cerebro-spinal fluid (CSF) examination were done in a group of patients suspected to have other extra pulmonary tuberculosis.

Certain group of patients who did not fulfill the diagnostic criteria for tuberculosis but had strong clinical suspicion of the disease on the basis of clinical symptoms, high ESR count, highly positive tuberculin test and presence of lymphadenopathy on abdominal ultrasound, were offered a one month course of anti tubercular treatment (ATT) and those patients who had significant clinical improvement were diagnosed to have tuberculosis and were also included in the study.

The individuals, who were included in the study, were subsequently assessed thoroughly as per the protocol. Which included the detailed clinical history and a complete physical examination followed by appropriate baseline and specific laboratory tests including the CD4 counts.

The different clinical presentations and manifestations were divided and analyzed accordingly based on the CD4 count.

Confidentiality of the collected data and the result was maintained and an informed written consent was taken before blood sample was taken for HIV testing.

RESULTS
Mean age at presentation was 36 years for the subjects. Youngest subject was of 22 years of age and the oldest one was 54 years of age. Predominant cases (30) were in the age group 31-35. 76% of the subjects were male and 24 % were females.

Figure 1: Age and sex wise distribution of TB-HIV patients

More than 90% of the patients presented with the history of fever. 87% of the patients had the complaints of weight loss, whereas 77% and 53% of patients complained of cough and loss of appetite respectively. Dyspnea and hemoptysis was present in 21% and 17% of patients respectively (Figure 2).

Figure 2: Symptomatic presentation of TB patients
25% of the patients had pulmonary tuberculosis (PTB) and 75% had extrapulmonary tuberculosis (EPTB) among which majority (30%) had Lymph node tuberculosis followed by disseminated tuberculosis (17%), tubercular pleural effusion (12%), miliary TB (6%), tubercular meningitis (4%), Intestinal TB (3%), TB pericardial effusion (3%) (Figure 3).

Figure 3: Clinical presentation of Tuberculosis

Among the patients with pulmonary tuberculosis (PTB), 65% of the patients had sputum negative for AFB and rest (35%) were sputum AFB positive(Figure 4).

Figure 4: Sputum positivity in pulmonary TB

Erythrocyte sedimentation rate (ESR) was done in all cases. Minimum value was 15 and the maximum value was 140 with the mean value of 86.16.

Sexual transmission was the mode of transmission of HIV in 99% of the patients.

Among the patients with extrapulmonary TB, 43% were diagnosed on the basis of positive lymph node FNAC and 15% according to pleural fluid analysis. CSF analysis and ascitic fluid analysis were the diagnostic tests in 6% and 3% of patients respectively.

33% of the patients were diagnosed to have extrapulmonary TB on the basis of strong clinical suspicion and positive response to antituberculosis treatment (ATT) for one month.

Clinical presentation in relation to CD4 counts

**CD4 count < 200/mm³**

Among the patients with CD4 count less than 200/mm³, majority of the patients had TB lymph node (36%), followed by disseminated tuberculosis (19%), PTB (15%), TB pleural effusion (11%) and miliary TB (8%). 11% of the patients in this group had other tuberculosis like pericardial, intestinal and TB meningitis (Figure 5).

Figure 5: Clinical presentation of Tuberculosis with CD4 count <200/mm³
**CD4 count 201-350/mm³**

Majority of the patients with CD4 count between 200 and 350 had Pulmonary Tuberculosis (53%) followed by TB Lymph node (21%). Whereas only 13% each of the patients had TB pleural effusion and disseminated TB respectively (Figure 6).

![Figure 6: Clinical presentation of TB with CD4 count 201-350/mm³](image)

**CD4 count > 350/mm³**

Pulmonary tuberculosis tops the list (60%) among the patients with CD4 counts more than 350/mm³ followed by disseminated tuberculosis and TB pleural effusion (Figure 7).

![Figure 7: Clinical presentation of Tuberculosis with CD4 count > 350/mm³](image)

**Radiological findings on chest X-ray in relation to CD4 counts**

1. **CD4 count < 200**
   - Maximum numbers of patients with CD4 counts had mid-zone involvement and miliary pattern on chest x-ray (21% each) followed by pleural effusion, hilar lymphadenopathy and lower zone involvement. Upper zone involvement was seen only in 6% of the patients.

2. **CD4 count between 200 and 350**
   - Upper Zone involvement was the major radiological finding on chest x-ray (59%) followed by hilar involvement (17%), TB Pleural effusion (17%) and cavitation (7%).

3. **CD4 count > 350**
   - In this group majority of the patients had upper zone involvement and pleural effusion (30% each).

**Findings on USG abdomen**

Majority of the patients (55%) didn’t have any abnormal findings detected on the ultrasound of abdomen, whereas 28% had lymphadenopathy, followed by hepato-splenomegaly (HS) (15%) and ascites (2%).

![Fig. 9: Ultrasound abdomen findings in TB abdomen](image)
DISCUSSION

Tuberculosis remains an important problem in patients with human immunodeficiency virus (HIV) infection all over the world. HIV-infected persons are at markedly increased risk for primary or reactivation tuberculosis and for second episodes of tuberculosis from exogenous reinfection. In our study of clinical presentation of tuberculosis among HIV positive patients, an attempt was made to analyze the various clinical presentations and manifestations of tuberculosis in persons infected with HIV in relation to CD4 count.

Out of 100 subjects studied, 71 had CD4 count less than 200/mm³, 24 had CD4 counts 200-350/mm³ and 5 had more than 350/mm³. Majority of the patients in this study were of the age group 31-35 years (n = 30) with the mean age being 36 years. The results are almost similar to the data given by NACO.

In a study of clinical profile of AIDS patients at a referral hospital, Sircar et al reported that the mean age of presentation was 34.9 years. In another study by Kothar et al, mean age of presentation was 32.76 years.

In our study, 76% of the population was males whereas females accounted for 24% with male: female ratio of 3.5:1. Other studies have also shown the male predominance among HIV infected population. George et al reported male: female ratio of 5:1 in their study of AIDS patients in south India, whereas Cohen et al reported a ratio of 9:1 in their study. Varma T. has also reported a male: female ratio of 4:1 in his study of 100 HIV positive patients.

In this study, 91% of the patients with Tuberculosis and HIV had fever as a presenting complaint, whereas 77% and 21% of the patients had complained of cough and dyspnea respectively at the time of presentation. Weight loss was present in 87% of the patients and 53% had loss of appetite. About 11% of the patients had other symptoms like abdominal pain, diarrhea, vomiting, joint pain, altered sensorium and headache at the time of presentation. 24% of HIV patients had HIV positivity in their spouse too. 28% of patients had past history and 18% had family history of tuberculosis.

Sexual transmission was the major (99%) source of transmission of HIV infection. National data of India shows that in 86% of cases sexual route was the major source of disease transmission followed by perinatal (4%) and Blood transfusion (2%).

Lymph node was palpable in 52% of the patients’, majority of which (94%) being cervical group of lymph node enlargement. 44% of the patients had undergone FNAC of the lymph node, and all were suggestive of tuberculosis. However none of the lymph node FNAC samples were positive for AFB.

Only 28% of patients had abnormal findings during respiratory system examination in the form of decreased or absent breath sounds, crepitations and rhonchi. 24% of the patients had abnormal clinical findings during abdominal examination. Among which 4% had ascites and 20% had hepatosplenomegaly. In our study, 28% of the patients had Pulmonary Tuberculosis (PTB) and rest (72%) had extrapulmonary Tuberculosis (EPTB).
Among the patients with Pulmonary TB, 35% had sputum positivity for AFB and 65% were negative. National data shows that sputum negativity was 82%\textsuperscript{11}. In a study by Gold et al. M. tuberculosis was isolated in 26% of patients\textsuperscript{12}. Data from other observers from India also show that tuberculosis is the most common opportunistic infection in HIV infected patients in India\textsuperscript{13}.

Among the patients having Extra-pulmonary TB (EPTB), 43% had TB lymphadenopathy followed by disseminated tuberculosis (23%) and TB pleural effusion (16%). Miliary TB was present in 8% of the patients followed by TB meningitis (5%). About 5% of the patients had other forms of tuberculosis like TB pericarditis and intestinal TB.

The clinical picture of tuberculosis with dual infection depends on the time elapsed since the diagnosis of HIV. In the early stages of HIV infection, when the cell mediated immunity is only moderately compromised, the clinical picture is typical and similar to that encountered among HIV negative patients with upper lobe cavitation and infiltrates\textsuperscript{2}.

Among the patients with Extrapulmonary TB, 43% were diagnosed on the basis of positive lymph node FNAC and 15% according to pleural fluid analysis. CSF analysis and ascitic fluid analysis were the diagnostic tests in 6% and 3% of patients respectively. 33% of the patients were diagnosed to have extrapulmonary TB on the basis of strong clinical suspicion (constitutional symptoms of TB, High ESR, strongly positive tuberculin skin test and detection of lymphadenopathy on ultrasound abdomen) and positive response to antituberculosis treatment (ATT) for one month. 60% of the patients with CD4 count more than 350/mm\textsuperscript{3} had PTB; whereas only 35% had EPTB in the form of disseminated TB (20%) and TB pleural effusion (20%).

With the decline in CD4 count, percentage of PTB also decreased gradually. Among the patients with CD4 count between 200 and 350/mm\textsuperscript{3}, PTB comprised of only 53% and 47% had EPTB, majority of which being TB lymphadenitis (21%) and followed by TB pleural effusion and disseminated TB, with 13% each.

Among the patients with CD4 count less than 200/mm\textsuperscript{3}, PTB comprised of only 15% of total tuberculosis cases with 85% of patients having EPTB. Among the EPTB, TB lymphadenitis was the most common (36%), followed by disseminated TB (19%) and TB pleural effusion (11%). 8% of the patients had miliary TB and rest 11% had other forms of TB like intestinal TB, TB pericarditis.

Many studies done on the patients having HIV and TB co-infection, have shown that extra pulmonary tuberculosis like pleural effusions, glandular tuberculosis, CNS and abdominal tuberculosis and disseminated tuberculosis are more common\textsuperscript{2}. Extra – pulmonary disease has been reported in upto 70% of HIV-related TB cases when the CD4 lymphocyte count is less than 100\textsuperscript{2}. In patients with relatively intact immune function (CD4 count >200/mm\textsuperscript{3}), PTB is more frequently seen than EPTB\textsuperscript{14}.

Tuberculin skin (Montoux) test was positive only in 32% of cases and rest
68% patients were montoux negative. Some of the studies from India have reported tuberculin negativity in HIV patients of the order of 52%\textsuperscript{2}. With the progression of immunosuppression, the immune reaction of body, as evidenced by tuberculin test, becomes weaker. That is the reason why tuberculin skin test is not considered as an effective tool in diagnosis of TB in HIV positive patients.

HIV infected persons with a well preserved immune function will show upper lobe involvement, cavitation, pulmonary fibrosis and shrinkage. However, as immune suppression worsens, chest X-rays more often show atypical findings such as pulmonary infiltrates affecting the lower lobes\textsuperscript{15}.

In this study Chest X-ray findings were as follows:
1. CD4 count more than 200/mm\textsuperscript{3}: Majority of the patients had upper and middle zone involvement (60%); followed by hilar involvement and pleural effusion (20% each).
2. Whereas as the CD4 count was less (less than 200/mm\textsuperscript{3}), majority of the patients had middle and lower zone involvement (33%). Upper zone involvement in these patients was just 6%. Hilar involvement and pleural effusion were present in majority of the patients (16% each). Caviatation was not seen in any of these patients with less CD4 counts.

**CONCLUSION**

Tuberculosis is the most common opportunistic infection in patients with HIV in our part of world. Clinical presentation of Tuberculosis in HIV positive patients is highly dependant upon the CD4 cell count. In HIV patients with higher levels of CD4 count, the clinical presentation of Tuberculosis remains fairly similar to those without HIV infection. However, when the patients become more immunocompromised as evidenced by low CD4 counts, atypical presentation of tuberculosis becomes more evident. As the CD4 count decreases, atypical presentations of TB are seen. Moreover, in quite a significant numbers of patients, diagnosis is done mainly on the basis of clinical suspicion. Hence there should always be a high index of clinical suspicion for the accurate and timely diagnosis of Tuberculosis in HIV positive patients.
REFERENCES

Surgical Complication rates of vaginal hysterectomy and surgical risk management performance index of rural hysterectomy camp

Pandit U1, Saha D2

1Department of Obstetrics and Gynecology, Chitwan School of Medical Sciences
2Department of Obstetrics and Gynecology, Nepalgunj Medical College.

ABSTRACT

Introduction: Vaginal hysterectomy in a rural hospital setting is very challenging job to gynecological surgeons. The objective of this study was to identify the complication rates and compare those rates with the weight of performance in surgical risk management index.

Methods: It was a combined prospective and retrospective observational study in a series of 632 women who underwent vaginal hysterectomy in 4 rural district hospital camps. Surgery was performed from October 31st to 25th December 2008.

Results: Out of 632 surgeries, the commonest complication was intraoperative haemorrhage 2.05 % (13) who needed blood transfusion followed by retention of urine 1.74% (11), perineal/vault infection 1.2%(8), haemoperitonium 0.31%(2) and pelvic infection 1.2%(1). The complication rate was highest among those who had third degree or procidentia with odds ratio 2.28, relative risk 2.19, and p value 0.039. The surgical risk management index of Camp1, Camp2, Camp3 and Camp4) were 14.58%, 13.12%, 8.54% and 7.08% respectively.

Conclusion: Sound surgical risk management preparedness and client satisfaction ensures the quality of surgery. The risk management indices measure the quality and demonstrate the space for improvements.

Key Words: complication, surgical risk management indices,

INTRODUCTION

The access to the operative services is still limited to regional hospitals in Nepal. It is almost impossible for the poor people to get surgical treatment in rural districts. Conducting large number of surgeries in rural hospital setting is one of the most challenging jobs, which demands strong risk management preparedness1. After the decentralization of vaginal hysterectomy surgery, the complication rates like hemorrhage, pelvic infection, perineal/vault infections and vault prolapse are increasing.

Nowadays, early postoperative deaths after vaginal hysterectomy are frequently reported in the media.

Correspondence:
Dr. Upendra Pandit,
Chitwan Medical Collage, Bharatpur-10, Chitwan
Email: drupandit@gmail.com,
The surgical camp organizer might have lost their image and credibility due to the unawareness of emergency preparedness in the rural surgical camp setting. There is also lack of documentation of the surgical risks, complications rate of rural surgery and death audit. The aim of this study was to compare the complication rates and surgical risk management performance index from the perspective of risk management principles and its guidelines.

**METHODS AND MATERIALS**

It was a combined prospective as well as retrospective study on complication rates and performance indices of the surgical management of vaginal hysterectomy camps in four district hospitals viz. Dang (Camp1), Dadeldhura (Camp2), Kapilbastu (Camp3) and Rauthat (Camp4). Surgery was performed from October 31st to 25th December 2008. The study was done in two parts:

I. Identification of complication rates among women underwent vaginal hysterectomy (Prospective study).

II. Assessment of surgical risk management performance index (Retrospective study).

Screening of uterovaginal prolapse was done by local health workers. Anemia, worm infestation, chronic chest infection and decubitus ulcers were identified and treated after screening. Presurgical screening was done to minimize surgical risk. We observed level of haemoglobin, hypertension, heart diseases, pulmonary diseases in women with prolapse. The women with uterovaginal prolapse who had surgical risks were identified and we provided alternative treatment to those women who were at risk for vaginal hysterectomy.

Informed consent and preoperative counseling was done. Ceftriaxone 1 gram and Metronidazole 500 mg intravenously were given as the preoperative antibiotics half an hour prior to surgery. Almost all operations were performed under spinal anesthesia. Diluted adrenaline solution (1%) was used to infiltrate locally to minimize intraoperative blood loss. Urethral catheter was removed on the second postoperative day. Oral antibiotics total for 7 days and iron supplementation for 1 month were also provided at the time of discharge. Majority of the patients were discharged on fifth day of operation after resuming their bowel and bladder functions. Postoperative follow up was done by the district hospital doctor and health workers of health post of respective districts. Prospective data were collected by health workers from respected districts.

A self-assessment tool was developed to evaluate the work. The working definition and working checklist were developed as per RM guide. Indicators were categorized, abbreviated, standardized and formulated. The qualitative assessment was done retrospectively through quantitative weight via allocating numbers of fulfillment of indicators. Identification of complication rate was done by the post surgical follow up inquiry for six weeks in respective institution and assessment of surgical risk management performance was done through allocating the performance weight by management team applying standard risk management indicators.
Working definitions:

Surgical risk management Preparedness (SRMP)³

Surgical Risk Management Preparedness (SRMP) is defined as the capability of the hospital and health care systems of an organization, communities, and individuals, to prevent, protect against, quickly respond to, and recover from surgical risk and related emergencies, particularly in the rural hospital setting. Preparedness involves a coordinated and continuous process of planning and implementation that relies on measuring performance and taking corrective action.

The indicators like risk identification, risk analysis, risk reduction & control and structure and resource for the implementation were observed⁴. Weight was given for each indicator / activity listed in the checklist as part of performance of the team. The weight ranges from 1-5. One (1) for low / negligible performance, two (2) for incipient which indicates insufficient performance level, three (3) for significant which indicates fair performance but with some restriction, four (4) for outstanding which indicates spontaneous performance level and five (5) for Optimal which innovative and creative performance.

Statistical tests were done with excel and EPI info 2000. P value <0.05 was considered as the significance level.

RESULTS

Out of 937 pre-surgery screened cases, 67% (632) cases were out of risk for vaginal hysterectomy and 21% (201) cases had risk factors. Eleven percent (104) cases refused or disappeared. Out of 201 cases, the predominant risk factors was moderate to severe anaemia 49% (99). The cut off haemoglobin level was considered as ≥ 9 g % followed by hypertension 24% (48) (cut off point >160 / 100 mm of Hg); COPD 16% (32), diabetes 7% (14) (cut off blood sugar level >140 mg %).

Out of 632 surgical cases, overall predominant age group was 51-60 (28%), followed by 41-50 years (26%) (Figure 1). The younger age group predominated in hilly area (camp no 2).

The highest number of cases who underwent surgery were with third degree prolapse or procedentia 60% (383) followed by second degree 23% (145), first degree 15% (86) prolapse and others 3% (17) (Table 1a). Out of 632 operative cases 6% (35) developed minor to major complications.

The commonest complication was intraoperative haemorrhage 2.05% (13) who needed blood transfusion followed by retention of urine 1.74% (11),
perineal/vault infection 1.2% (8), haemoperitonium 0.31% (2), pelvic infection 0.15% (1). Laparotomy was done upon 3 cases (two haemoperitonium and one with pelvic abscess) and the rest treated conservatively. Eleven cases needed blood transfusion. Significant complication rate (OR 2.26, p value 0.03) was observed in those women who had prolapse of third degree or procidentia (Table 1b).

<table>
<thead>
<tr>
<th>Table 1a. Distribution of severity/degree of prolapse and complication rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>Grade of Prolapse</td>
</tr>
<tr>
<td>1st degree</td>
</tr>
<tr>
<td>2nd degree</td>
</tr>
<tr>
<td>3rd degree</td>
</tr>
<tr>
<td>non specified</td>
</tr>
<tr>
<td>Complication Rate</td>
</tr>
<tr>
<td>Intraoperative haemorrage</td>
</tr>
<tr>
<td>Retention of urine</td>
</tr>
<tr>
<td>Major Perineal/vault Infection</td>
</tr>
<tr>
<td>Haemoperitonium</td>
</tr>
<tr>
<td>Pelvic infection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 1b. Comparision between complication rate and severity of UVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Post op complication</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>Third degree UVP</td>
</tr>
<tr>
<td>Other than Third degree</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

The performance qualification weight given by the team during assessment was demonstrated as in Table 2a, Table 2b, Table 2c and Table 2d.
The surgical risk management indices of Camp1, Camp2, Camp3 and Camp4) were 14.58%, 13.12%, 8.54% and 7.08% respectively (Figure 2).

Figure 3 depicts the comparison between complication rate and risk management performance indices. Data showed that when the performance decreased the complication rate was also increased.

| Table 2a. Qualification of Risk Identification Indicators |
|---------------------------------|---|---|---|---|
| Indicators | Camp1 | Camp2 | Camp3 | Camp4 |
| RI1 | 3 | 2 | 2 | 2 |
| RI2 | 3 | 3 | 2 | 2 |
| RI3 | 3 | 3 | 3 | 2 |
| RI4 | 2 | 2 | 1 | 2 |
| RI5 | 3 | 3 | 2 | 2 |
| RI6 | 3 | 3 | 2 | 2 |

| Table 2b. Qualification of Risk Analysis Indicators |
|---------------------------------|---|---|---|---|
| Indicators | Camp1 | Camp2 | Camp3 | Camp4 |
| RA1 | 3 | 2 | 2 | 2 |
| RA2 | 3 | 2 | 1 | 1 |
| RA3 | 3 | 2 | 1 | 1 |
| RA4 | 3 | 2 | 1 | 2 |
| RA5 | 3 | 2 | 1 | 2 |
| RA6 | 3 | 2 | 2 | 1 |

| Table 2c. Qualification of Risk Reduction Indicators |
|---------------------------------|---|---|---|---|
| Indicators | Camp1 | Camp2 | Camp3 | Camp4 |
| RR1 | 3 | 2 | 2 | 1 |
| RR2 | 3 | 2 | 2 | 1 |
| RR3 | 3 | 2 | 2 | 1 |
| RR4 | 3 | 2 | 1 | 1 |
| RR5 | 3 | 2 | 2 | 1 |
| RR6 | 3 | 2 | 2 | 1 |

| Table 2d. Qualification of structure and Resources |
|---------------------------------|---|---|---|---|
| Indicators | Camp1 | Camp2 | Camp3 | Camp4 |
| SR1 | 3 | 3 | 2 | 1 |
| SR2 | 3 | 3 | 1 | 2 |
| SR3 | 3 | 3 | 2 | 2 |
| SR4 | 3 | 3 | 2 | 2 |
| SR5 | 3 | 3 | 2 | 2 |
| SR6 | 2 | 2 | 2 | 2 |

DISCUSSION

The quality of service is very difficult to measure and quantify. It is hard to claim quality services without any measure. There are no absolute measurement tools to prove quality services. But there are some relative indicators which can be measured. From the risk management point of view, there are certain indicators which are very important, such as identification of risk, risk analysis, risk reduction, resources and structural strength.

In surgeries performed in any area whether it is in central or rural, identification of risk can reduce the complication rate. In vaginal hysterectomy surgery, there are
multiple medical comorbidities like anemia, hypertension, chronic obstructive pulmonary diseases, and diabetes. In this study about 21% cases had one of the afore mentioned problems.

Heisler et al in his series of 712 cases of vaginal hysterectomy 19.5% had morbidity associated with congestive heart failure or myocardial infarction, prior thrombosis, perioperative hemoglobin decrease >3.1 g/dL, or preoperative hemoglobin <12.0 g/dL which were associated with increased perioperative complications. He suggested Quality improvement efforts should modify these variables to optimize outcomes. In our series almost all operated cases had preoperative haemoglobin level <12.0 gram percent. The cut off haemoglobin level of our series was considered as ≥ 9 g%. Identification of the degree of prolapse is also important clinical factor to reduce complication rate. The significant postoperative complication rate was observed among third degree or procedencia. The exclusion of third degree prolapse for surgery is not a justifiable management. However arrangement of expertise for the difficult operation, arrangement of the blood donation programme will definitely make sense in the surgical management preparedness.

A high rate of retention of urine was observed postoperatively in those women who had procedentia. Procedentia with huge cystocele naturally have got more residual volume of urine so that, they are prone to develop retention of urine postoperatively. Retention of urine was observed and managed in 11(1.74%) cases; similar retention rate was reported previously in one series.

Major threats to patient safety are the result of a complex combination of active and latent failure. Active failures occur usually due to human errors. The error most commonly occurs in communication from the admission to discharge of a patient. In one series, 60 cases incurred 81 communication breakdowns, occurring in the preoperative (38%), intraoperative (30%), and postoperative periods (32%). Seventy-two percent of cases involved one communication breakdown. The majority of breakdowns were verbal communications (92%). In this series we could not measure error in communication. There might be a large number of lapses in the communication.

The latent failures are mainly caused by underlying organizational problems and predispose to active failures. Latent failure is the root cause of most threats to patient safety. If we look at the indices of risk identification, system failure was prevalent more. In camp setting the ideal operation theatre is difficult to find. We have to negotiate with available local resources. Minor carelessness such as use of single gowns to operate more than one case, inability to prevent fly enter into the operating room, failure to take the vaginal pack out and operating in menstrual phase do predispose to failures. Operating during urinary tract infection is very common active failure of human negligence which predispose to increase infection rate.

Accidental injury to the bladder during hysterectomy occurred in 1 case (0.1%) in our series however Bhatacharya MS reported occurrence of bladder injury in 1.17% of her 1105 vaginal hysterectomy case series. The reported incidences of Bladder injury range from 0.36% to 1.17%.
Minor vault infection is the commonest complication of vaginal hysterectomy. However, among the reported cases, major vault infection was observed in 1.2% cases. Similar finding was reported by Bhatacharya MS. The reported vault infection rate from 2% to 11%. Incidence of pelvic/vault sepsis can be minimized by keeping the pelvic drain. The drain was kept in 57 cases in our series. No 16-20 F foley catheter was used to make efficient drainage and lessen the infection.

Immediate and late hemorrhage is the major risk in vaginal hysterectomy. In our series incidence of primary haemorrhage was observed in 2.05% of total hysterectomies. Most of the available series reported the incidence of primary hemorrhage which ranges from 0.81-2.4%. Primary haemorrhage is controlled by immediate exploratory laparotomy with ligation of uterine or ovarian vessels and internal iliac ligation in presence of broad ligament haematomas. Exploratory laparotomy was done in 2 cases but none of them needed internal iliac artery ligation. We explored the bleeding point through vaginal route in 10 cases to manage primary haemorrhage. Most of the bleeding was from the vessels of the urinary bladder. It was possible to trace bleeding point in 10 cases through vaginal route. After exploration drainage was kept and blood transfusion was done to recover the blood loss. So the programme of blood donation and facility for blood transfusion is crucial measure to reduce and manage surgical risk. Late haemorrhage were managed by repacking of the vaginal canal.

Deep vein thrombosis and pulmonary emboli was not observed in our series but these were frequently reported in western series. There were two (0.03%) deaths in this series of 632 cases of vaginal hysterectomy. One case had preexisting diabetes mellitus was died due to hypoglycaemia on 3rd day of surgery and the other died of intestinal obstruction on 2nd day of surgery who had preexisting diaphragmatic hernia which was missed at presurgical screening. She was referred for laparotomy but died on the way to hospital. Mortality rate following vaginal hysterectomy varies from 0.03 to 0.38%.

The management of death is also crucial part of vaginal hysterectomy camp. The death audit includes the decision for investigation, selection of member of investigation team, data gathering from physical findings, chronology of error of event, identification of contributory factors and involvement of family member in the process. All the activities mentioned in the process were applied in 2 death audit in this series.

There is always a rush and real possibility of lacking of proper documentation exists during camp management. The informed consent includes listing of all possible complications and capacity to manage those risks should be explained. Explaining only the risk might terrorize to the patient or patient party which will be sufficient for them to avoid surgery. Maintaining anesthesia chart; taking history especially past medical history; writing operation notes including intraoperative finding, blood loss, intraoperative urine output; maintaining daily progress notes on subjective, objective, analysis and plan (SOAP) are the most important defensive layers of risk management and legal support indeed.

Errors can happen like hypersensitivity reaction, allergy to intravenous drip due to
the presence of invisible precipitates and these are quite unavoidable conditions. Electric burn can occur due to contact of any part of patient’s body to the metal bed during surgery and electric cauterization. One such incident happened in the first camp. The most important tangible consequence is the death, injury, and disability that are falsely predicted not to occur or underestimated.

Operating upon advanced age people (>65 year) has got more risk than upon young (<40) years. Women of this age group might have sub clinical coexisting heart problems, sub clinical renal problems that might become evident after surgical stress.

Simple Electrocardiography and Laboratory investigation like serum creatinine may predict heart and renal risk respectively. Immobility after surgery may lead to deep vein thrombosis so early mobilization and advice for proper mobility at home are crucial in the prevention.

After identification and assessment of risk the potential treatment of risk is also important in risk management strategies. The risk reduction strategies include avoidance, optimization, sharing and retentions. Risk avoidance includes not performing an activity that could carry risk. The surgery can be deferred until and unless the capacity of risk management would build up, like extended cardiac evaluation and provision of ICU care. Practically risk transfer is easy to reduce the risk such as referral to upgraded hospital which has got capacity to handle that risk. One to two percent of patients who have got cardiac problems were referred to regional level hospital for the management.

The vaginal hysterectomy surgical risk can be reduced by applying definite guidelines. When you operate large number of cases in small period of time, it increases risk of hemorrhage and technical lapses. So there are still tremendous spaces to improve ourselves to dispense qualitative surgical care by following surgical risk management preparedness strategies.

Fogarty M. J. P. has reported a different finding. A system of preparedness based on inter-personal communication so that surgeon and patient understand expected outcomes of the procedures, possible complications and how to deal with them, has not been shown to improve the actual quality of surgery. Good preparation by the surgeon for a particular procedure tends to improve the safety of that procedure even if there are individual differences between surgeon’s technical ability. However, such preparation does not affect the actual quality of the surgery.

CONCLUSION

Quality of surgery tends to be measured by outcome of episodes of surgical treatment. Until recently this outcome was mostly assessed by surgeons but now most realize that patient’s assessment of outcome is more important.

Acknowledgement:

Dr R.S Thakur, DHO Rauthat, Dr Althaf, Dr. B.Devkota from Dang hospital, Dr Ananta Sharma DHO Kapilbastu and Director of team hospital Dadeldhura, gratitude goes to the UNFPA for financial support and Thanks goes to Mr. K.K. Mishra for his valuable guidance and supervision.
REFERENCES