

# Infectious morbidity in gynecologic oncologic surgery

## *A clinical and economic evaluation*

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**Summary:** In the Department of Obstetrics and Gynecology, Faculty of Medicine, Varese, between March 1991 and February 1992, 70 consecutive patients undergoing elective oncologic surgery were evaluated for rationalizing the use of antibiotics in order to reduce the cost of infectious complications. We divided our patients into two groups: a high infection risk group and a low infection risk group. Our findings show that: the HIR group shows a higher antibiotic cost than LIR one; our selection criteria for HIR patients are probably correct; in the LIR group 46.6% of patients were not submitted to any antibiotic therapy.

**Key words:** Infectious complications; Economic evaluation.

## INTRODUCTION

In the Department of Obstetrics and Gynecology, Faculty of Medicine, Varese, between March 1991 and February 1992, 70 consecutive patients undergoing elective oncologic surgery were evaluated for rationalizing the use of antibiotics in order to reduce the costs of infectious complications.

The main behavioural possibilities in Gynecologic Oncologic Surgery (GOS) are three: no Antibiotic Prophylaxis (AP) and therapy of infectious complications; use of AP in all patients; AP only in patients with high risk of infection.

In this study we have tried to determine infectious risk factors according to the international literature <sup>(1, 2, 3, 4)</sup> in order to

select gynecologic oncologic patients to be submitted to AP.

## MATERIALS AND METHODS

This study makes use of particular criteria to evaluate the incidence and severity of the infections, even the less severe. These criteria express a quantitative, a qualitative and an indirect aspect:

**Quantitative aspect:** infection classified as in-situ, extra-situ or indefinite (Severe Febrile Morbidity).

**Qualitative aspect:** different degrees of infection of the abdominal wound, of the pelvic infection, analysis of medical/surgical/pharmacological costs necessary to cure the infection.

**Indirect aspect:** operation time, permanence of Foley catheter, blood transfusions, Karnofsky index, post-operative hospitalization.

We enrolled 70 consecutive pts undergoing elective oncologic surgery; on the grounds of our previous experiences we distinguished:

A) a *high infection risk group* - 15 patients, submitted to antibiotic prophylaxis (Single dose or long term), determined by:

- patients with diabetes;
- patients submitted to Contaminated (serious technical mistakes, contamination due to

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intestinal intervention, phlegmonous appendicitis, intervention on infected genito-urinary tract) and Dirty (phlogistic focus near the surgical site, perforation, gangrenous appendicitis and/or pelviperitonitis and/or extensive peritonitis) Surgical Procedure.

- patients who needed an antibiotic prophylaxis because of  $WBC < 2.5 \times 10^9/l$ ; heart valvular diseases etc;
- patients who had used cortisones during the 15 days before the operation.
- fever during the 24 hours before the operation.

B) and a *low infection risk group* - 50 patients, not submitted to any antibiotal prophylaxis, who did not satisfy the above criteria.

For each patient we considered the following evaluation criteria recorded in a data collection form by the investigators:

*Laboratory test required before the intervention:*

- Haemocrome with leukocytes count and formula.
- Uroculture (positive urocultures were treated only in the presence of symptomatology and/or "not urgent" interventions).
- Pap Test.

*Post-operative tests:*

- Uroculture at removal of the urinary catheter (uroculture was repeated every 4 days in those patients in whom the catheter remained longer than 4 days). If the uroculture was positive upon discharge, a new uroculture was performed at the end of treatment.
- For each patient, a laboratory evaluation was performed on the 1st and 7th day. It included: haemopoietic function, renal function, hepatic function.

*Compulsory cultures in the presence of fever or diarrhoea:*

- Coproculture if diarrhoea occurred ( $> 2$  episodes per day) with detection of *C. difficile*, to be repeated daily until all symptoms disappear.
- Blood culture (hemoculture) if fever  $> 38^\circ C$  and/or in the presence of shivering, to be performed every 6/12 hours if symptomatology persistent.

Only after a minimum of 3 blood cultures, a general antibiotic treatment was taken into account.

*Post-operative clinical evaluation:*

- Serious febrile morbidity (SFM): 2 consecutive days of fever  $> 38^\circ C$  apart from the first 24 hours after the intervention without other symptoms/signs of infection.
- In-situ infections.

Abdominal wound infection according to Dionigi's Score (5).

Pelvic infection according to OSG Group - Monza, modified.

- Extra-situ infections.

According to Dionigi and Dominioni's Score (5), the infections outside the site of intervention are classified as follows:

- a) Urinary Tract
- b) Respiratory Tract
- c) Thrombophlebitis
- d) Abdominal Cavity
- e) Infections of other type

A score for severity has not been created.

*Economic criteria:*

To obtain a qualitative datum about the severity of the complication we made use of economic criteria. For each patient we estimated the price, in Italian Lire, of all the treatments performed during hospitalization and/or at home for infections related to the surgical intervention divided as above described. This price derives from the total amount of antibiotic treatment calculated according to the price list of specialist service or of the mean hospital costs of the Lombardy region, Italy.

*Follow-up:*

The study coordinators drew up a global clinical/economic evaluation of the patient at the time of her discharge, that was reported on the appropriate form. A follow-up was performed 4 weeks after the discharge; if the patient was not completely cured another follow-up was performed after 8 weeks from the discharge.

The only compulsory examination to be performed at the time of the discharge was a uroculture, performed 10-15 days after the end of the therapy, for those patients with a positive uroculture after the intervention.

RESULTS:

Between March 1991 and April 1992 we enrolled 70 consecutive patients undergoing elective oncologic gynecologic surgery.

3 out of 70 patients were not considered: 2 because of the use of antibiotics during the 15 days before the operation and 1 for intraoperative death.

15 patients were included into the High Infection Risk group (HIR) (6 for diabetes, 3 for contaminated or dirty surgical procedure, 3 for  $WBC < 2.5 \times 10^9/l$ ,

2 for cardiovascular disease, 1 for fever during the 24 hours before operation) whereas 60 patients were in the Low Infection Risk group (LIR).

*HIR group: 15 patients*

*Histological findings:*

Ovarian cancer	6 (40%)
Cervical cancer	2 (13.3%)
Uterine cancer	6 (40%)
Vulvar cancer	1 (6.6%)

*Median age* 67 (range 30-85)

*Median operation time* 185' (range 30-245)

*Median postoperative hospitalization* 11 days (range 7-26)

*Median Foley permanence* 2 (days (range 1-9))

*Median Karnofsky index* 100 (range 80-100)

*Operation type*

TAH/Piver I	1 (6.6%)
Piver II	4 (26.6%)
Piver III	1 (6.6%)
Vulvectomy	1 (6.6%)
Laparotomic	
II-look	4 (26.6%)
Restaging	3 (20%)
Others	1 (6.6%)

*Infectious complications*

SFM	1 (6.6%)
Wound infection	1G3 (6.6%)
Pelvic infection	0 (%)
Urinary tract infection	3 (20%)
Hemoculture +	2 (13.3%)

*Economic evaluation*

Cost/pt L. 64.888

Cost/pt w/o UTI L. 60.621

*LIR group: 52 pts*

*Histological findings:*

Ovarian cancer	19 (36.5%)
Cervical cancer	17 (32.6%)
Uterine cancer	14 (26.9%)
Vulvar cancer	2 (3.8%)

*Median age* 56 (range 29-82)

*Median operation time* 165' (range 55-300)

*Median postoperative hospitalization* 11 days (range 4-24)

*Median Foley permanence*

3 days (range 1-24)

*Median Karnofsky index* 100 (range 50-100)

*Operation type*

TAH/Piver I	5 (9.6%)
Piver II	20 (38.5%)
Piver III	13 (25%)
Vulvectomy	2 ((3.8%)
Laparotomic	
II-look	5 (9.6%)
Restaging	7 (13.5%)
Others	0

*Infectious complications*

SFM	2 (3.8%)
Wound infection	5 (4G3, 1G4) (9.6%)
Pelvic infection	0
Urinary tract infection	20 (38.4%)
Hemoculture +	1 (1.9%)
Respiratory tract infection	1 (1.9%)

*Economic evaluation*

Cost/pt L. 24.408

Cost/pt w/o UTI L. 19.303

**CONCLUSIONS**

These preliminary data support the usefulness of our quantitative/qualitative system of infectious complications evaluation, specially for an economic appraisal (price of all prophylactic and therapeutic antibiotics employed) to grade the severity of complications.

The HIR groups shows a higher antibiotic cost than LIR one.

Our findings indicate that our selection criteria for HIR patients are probably correct and in this group AP is necessary to maintain infectious complication with in the range described above.

In the LIR group 46.6% of patients was not submitted to any antibiotic therapy. In this group the main infectious complication is represented by UTI depending on longer Foley catheter permanence and probably less influenced by an eventual AP.

Finally, our experience shows that:

- it is necessary to test the real efficacy of an AP in LIR patients in whom we did not have a dramatic incidence of infectious complications;
- in the LIR group 46.6% of patients was not submitted to any antibiotic therapy;
- nowadays it is difficult to propose a mode effective schedule of AP in HIR patients.

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