IS ANTIBIOTIC PROPHYLAXIS IN KNEE ARTHROSCOPY MANDATORY?

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ABSTRACT

Objective: To determine the need of prophylactic antibiotics in knee arthroscopic procedures.

Methods: Three thousand patients, who presented to our sport medicine clinic in The Royal Rehabilitation Center at King Hussein Medical Center between January 2002 and February 2004, were assessed. Patients who refused to be enrolled in the study, those who would need complex procedures as anterior cruciate ligament reconstruction or accompanied arthrotomy and those with predisposing factors to infection as diabetes mellitus, immune deficiency disorders and steroid therapy were excluded from the study. Patients were divided into two groups; patients in group A were given one gram 1st generation cephalosporins at the induction of anesthesia and patients in group B were kept without antibiotic prophylaxis. All surgeries were conducted under general anesthesia with tourniquet. The patients were followed at 1, 3, 7 days and 3, 6 months for signs of infection. Statistical analysis was performed using the student t- test.

Results: One hundred eighty patients were included in the study and divided into two groups with equal numbers. There were no significant differences between the two groups in terms of age, pathology detected in knees, surgical procedures performed and operative time. No infection was detected in both groups during follow up. No complications of antibiotic use were encountered.

Conclusion: Our results are preliminary to an ongoing study but we can conclude that using antibiotic prophylaxis, as a routine, in operative knee arthroscopy is not mandatory. Antibiotic usage may increase cost and may lead to antibiotic complications. Antibiotic prophylaxis may have a role in complex knee arthroscopic procedures as anterior cruciate ligament reconstruction.

Key words: Antibiotic prophylaxis, Complication, Infection, Knee arthroscopy

JRMS August 2009; 16(2): 39-41

Introduction

Knee arthroscopy has become one of the most common orthopedic procedures used for both diagnosis and treatment, probably due to the low morbidity compared to arthrotomy.[1]

Numerous complications have been reported in literature, such as infection, deep vein thrombosis, compartment syndrome, popliteal artery injury, false aneurysm, and hemarthrosis.[1-8] Rates of infection following knee arthroscopy were reported as 0.02-0.04% by Wertheim, 0.1% by Sherman *et al*,[9] and 0.42% by Armstrong.[8-10] These low rates of infection following knee arthroscopy rose the point of not using antibiotic prophylaxis in such procedure.[11] Kurzweil recommended prophylactic antibiotics use for knee arthroscopic procedures to prevent infection that may lead to a prolonged antibiotic usage and hospital stay.[12]

Our study is a prospective study to determine the need of antibiotic prophylaxis in knee arthroscopic procedures.

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Manuscript received July 12, 2006. Accepted January 11, 2007

Table I. Excluded arthroscopies

Reasons of exclusion	DM	RD	HD	Arthrotomy	Refusal
120	10	4	1	25	80

DM: Diabetes mellitus, RD: Rheumatoid diseases,
HD: Hematological diseases

Table II. Distribution of patients in groups

	Group A	Group B	P
M:F	88:2	87:3	Ns
Mean Age	27 ys	28ys	Ns
Average Duration of surgery	60 min.	70 min.	Ns

P=>0.05 not significant (Ns)

Table III. Diagnostic findings

	Group A	Group B	P
Meniscal tear	70	68	Ns
Anterior cruciate tear	12	14	Ns
Synovial pathology	3	1	Ns
Pathologic plica	7	6	Ns
Normal knee	7	9	Ns

* Some patients may have more than one finding
**P=>0.05 not significant (Ns)

Table VI. Therapeutic procedures

Surgical procedures	Group A	Group B	P
P.Menisectomy**	70	68	Ns
Plica excision	7	6	Ns
Synovial biopsy	3	1	Ns
Diagnostic	7	9	Ns

* P =>0.05 not significant (Ns)
** Partial

Methods

A total of 3000 patients who presented with knee complaints, to our sport medicine clinic in The Royal Rehabilitation Center of King Hussein Medical Center in Amman between January 2002 and February 2004, were assessed. Patients who refused to be enrolled in the study, those who would need complex procedures as ACL reconstruction and accompanied arthrotmy and those with known medical diseases as diabetes mellitus, rheumatic diseases and immune deficiency diseases, as predisposing factors for infection, were excluded from the study, as shown in Table I.

One hundred eighty patients were included in the study and divided equally into two groups according to the admission number. Group A (with even admission numbers) and were given one gram 1st generation cephalosporin (cephalothine) at the induction of anesthesia and group B (with odd admission numbers) were left without antibiotic prophylaxis (Table II).

The arthroscopy was for therapeutic purposes of simple knee pathologies as meniscal tears, synovial pathologies, plicas and diagnostic for some nondefinable knee complaints. Both anterolateral and anteromedial portals were used. All surgeries were conducted under general anesthesia with tourniquet and by the same surgeon. The instruments were sterilized using 2% glutaraldhyde (cidex) for 15 minutes. The duration of surgeries is shown in Table II.

Patients were followed up for local and systemic signs of infection including swelling redness, hotness and fever.

Statistical analysis of the age, sex and duration of surgeries, diagnostic findings and therapeutic procedures was done using the students t –test with the probability value of <0.05 being significant.

Results

One hundred eighty patients were included in the study and divided equally into two groups.

There were no significant differences between the two groups in terms of age, sex and duration of surgeries (p>0.05) as shown in Table II. There were no significant differences between the two groups in term of pathologies detected in the knees and surgical procedures performed (p>0.05) (Table III and Table IV).

No cases of superficial or deep infections were detected during the follow up of patients. None of the patients in group A developed side effects, including allergy, to the antibiotic taken.

Discussion

Knee arthroscopy is one of the most commonly used orthopedic procedures possibly because of the lower morbidity compared to arthrotomy.[1] Infection is a rare to nearly absent complication.[5-7] Rates of infection were reported as 0.02-0.04% by Wertheim, 0.1% by Sherman *et al* and 0.42% by Armstrong.[8-10] Wieck suggested that the routine use of antibiotic prophylaxis in patients undergoing knee arthroscopy and the slight risk of infection are

outweighed by the cost of the antibiotics and the risk of allergic reactions.[11]

In our study and likewise to Wieck, we do not suggest using antibiotic prophylaxis in routine knee arthroscopy although no complications of the antibiotic was encountered.

Kurzel suggested using prophylactic antibiotics to prevent deep infection, which would require a long term of antibiotic usage, and hospital stay.[12] Angelo and Ogilvie reported 0.23 % of infection and suggested the use of first generation cephalosporin for reducing hospital cost and patient morbidity.[13]

Infection increases in those undergoing complex surgeries with long procedures, immuncompromized and those receiving intraarticular steroid after arthroscopic surgeries is recommended.[2,10,14]

Conclusion

Our results are preliminary to an ongoing study with a larger number of patients but we can conclude that antibiotic prophylaxis in operative knee arthroscopy should not be routinely ordered. The routine usage may be costly and may have side effects, as allergic reactions. The administration of prophylactic antibiotics could be useful in complex knee surgeries as ligament reconstruction and for immune compromised patients.

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