

# A Study of Adverse Effects of Fluoroquinolones

Dr Prashanth Kumar

Professor, Department of Internal Medicine, Kanachur Institute of Medical Sciences, Deralakatte, Mangalore, India

**Abstract:** Fluoroquinolones are the quinolone anti – microbials which are known to have one or more fluorine substitutions. The first generation fluoroquinolones which was introduced in 1980s have one fluoro substitution. This was very affective in cases of gram – negative bacterias. In the 1990s, compounds with additional fluoro and other substitutions have been developed – further extending anti – microbial activity to gram positive cocci and also anerobes which also has higher metabolic stability. This study puts in a sincere effort to understand in depth the tendinitis and rupture complications caused by the drugs which belong to fluoroquinolones. This study is intended to help the general practisioners and the practicing orthopedicians to know the depth of the disease and to attend the primary cause of the tendinitis and associated rupture secondary to the use of fluoroquinolones. Forty patients were selected who attended the Department of Internal Medicine. The present study was done in the Department of Internal Medicine at Kanachur Institute of Medical Sciences, Mangalore. The present study was done from April 2016 to September 2016. All statistical analysis was done using latest SPSS (2015) software. California. There is a positive significant relation between the tendinitis and tendon rupture complications associated with the use of Fluoroquinolones. The study successfully shows the association. In a country like ours where these Fluoroquinolone drugs are used very commonly has to check its utilization in a proper way.

**Keywords:** Fluoroquinolones, Tendinitis, Complications, Antimicrobial, Fluorine

## 1. Introduction

Fluoroquinolones are the quinolone anti – microbials which are known to have one or more fluorine substitutions. The first generation fluoroquinolones which was introduced in 1980s have one fluoro substitution. This was very affective in cases of gram – negative bacterias <sup>1</sup>. In the 1990s, compounds with additional fluoro and other substitutions have been developed – further extending anti – microbial activity to gram positive cocci and also anerobes which also has higher metabolic stability <sup>2,3,4</sup>.

The present topic of controversy is tendinopathy and tendon - rupture induced by fluoroquinolone. There is enough data which suggest that fluoroquinolones should be used with utmost care in population of patients <sup>5</sup>. The patient developed A chilliest endinopathy and the associated rupture was reported in New Zealand in the year 1983 <sup>6</sup>. Subsequently, there were many other case reports and case-controlled studies reporting similar findings <sup>7-9</sup>. Fluoroquinolone are commonly prescribed to treat community-acquired infections involving the respiratory, urogenital, and gastrointestinal tracts <sup>10</sup>. Fluoroquinolone concentration is seen on a higher scale in bones and joints when compared to the serum levels. So it is ideal to treat the bones and joint infections <sup>11</sup>. The cartilage infections is also treated with fluoroquinolone. Achilles tendinitis or rupture is among the most serious side effects associated with fluoroquinolone <sup>12</sup>.

## 2. Aims and Objectives

To understand the other complications of fluoroquinolone.

## 3. Materials and Methods

Forty patients were selected who attended the Department of Internal Medicine and complained of tendon pain or tendon rupture.

The present study was done in the Department of Internal Medicine, Kanachur Institute of Medical Sciences, Mangalore.

The present study was done from April 2016 to September 2016.

Past history was taken in detail and use of fluoroquinolone drugs were asked. Gender based statistical analysis was not done as female patients were very low in number.

### Inclusion criteria

Only positive use of fluoroquinolone drugs if present in the past history was taken for the study.

### Exclusion criteria

Negative fluoroquinolone drugs usage history was not considered.

All statistical analysis was done using latest SPSS (2015) software. California.

## 4. Results

**Table 1:** Association of Tendonitis, Tendon rupture and associated complications

	Tendon Rupture		X <sup>2</sup> value	p value
	Present (%)	Absent (%)		
0 – 20 years	Nil	Nil	12.988	0.005
20 – 40 years	Nil	3		
40 – 60 years	1	25		
60 – 80 years	1	3		
80 years	Nil	7		

There is a strong significance between Tendonitis and Tendon Rupture and fluoroquinolones usage.

**Table 4:** Other commonly associated complications

Complications	0 – 20 years	20 – 40 years	40 – 60 years	60 – 80 years	> 80 years
Gastro - Intestinal	2	2	1	4	3
CNS	5	Nil	1	6	2
Skin hypersensitivity	1	1	1	5	Nil

## 5. Discussion

Fluoroquinolones has good safety record. A side effect occurs in about ten percent of the patients but is generally mild. Withdrawl is needed only in about 1.5 percent. Gastro – Intestinal side – effects include nausea, vomiting, bad taste, anorexia. Because gut anaerobes are not effected diarrhea is in – frequent. CNS disturbances include dizziness, headache, restlessness, anxiety, insomnia, impairment of concentration and dexterity. So it should be cautiously used while driving. Tremors and seizures will be occasionally seen and is known to occur in high doses or when pre – disposing factors are present. Possibly it is reflect GABA antagonistic action of fluoroquinolones. Skin hypersensitivity includes rash, pruritis, photo – sensitivity, urticaria, swelling of lips etc. Serious cutaneous reactions are rare.

Because of the broad – spectrum activity of these drugs it has been rampantly used in this part of the country. The side effects even though are few and rare but if it sets in may cause life – long consequences. So it is important to check its use and proper law has to be enforced to check its utilization.

## 6. Conclusion

There is a positive significant relation between the tendinitis and tendon rupture complications associated with the use of Fluoroquinolones. The study successfully shows the association.

## References

- [1] Zhanel GG, Walkty A, Vercaigne L, et al. Fluoroquinolones in Canada: a critical review. *Can J Infect Dis* 1999;10:207-38.
- [2] Zhanel GG, Ennis K, Vercaigne L, Gin AS, Embil J, Hoban DJ. Critical review of fluoroquinolones: focus on respiratory infections. *Drugs* 2002;62:13-59.
- [3] Marrie TJ, Grossman RF, et al. Canadian guidelines for the initial management of community-acquired pneumonia: an evidence-based update by the Canadian Infectious Diseases Society and the Canadian Thoracic Society. *Clin Infect Dis* 2000;31:383-421.
- [4] Bartlett JG, Dowell SF, Mandell LA, et al. Practice guidelines for the management of community-acquired pneumonia in adults. *Clin Infect Dis* 2000;31:347-82.
- [5] Waknine Y. Fluoroquinolones earn black box warning for tendon related adverse effects. [www.emedicine.medscape.com](http://www.emedicine.medscape.com).
- [6] Bailey RR, Kirk JA, Peddie BA. Norfloxacin induced rheumatoid disease. *N Z Med J*. 1983;96:590.
- [7] Giovanni C, Zambon A, Bertu L, et al. Evidence of tendinitis provoked by fluoroquinolonetreatment. *DrugSaf*. 2006;29(10):889–896.
- [8] Royer RJ, Pierfite C, Netter P. Features of tendon disorders with fluoroquinolones. *Therapie*. 1994;49:75–76.

- [9] Pierfite C, Gillet P, Royer RJ. More on fluoroquinolone antibiotics and tendon rupture [letter] *N Engl J Med*. 1995;332(3):193.
- [10] Akali AU, Niranjan NS. Management of bilateral Achilles tendon rupture associated with ciprofloxacin: a review and case presentation. *J PlastReconstrAesthet Surg*. 2008;61(7):830–834.
- [11] Melhus A, Apelqvist J, Larsson J, et al. Levofloxacin-associated Achilles tendon rupture and tendinopathy. *Scand J Infect Dis*. 2003;35(10):768–770.
- [12] Gultuna S, Koklu S, Arhan M, et al. Ciprofloxain induced tendinitis. *J ClinRheumtol*. 2009;15(4):201–202.