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Research Article

Complications Efficacy of Infection Preventive

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ABSTRACT

This retrospective study explored the association between osteoarthrosis and infectious complications and evaluated infection-preventive nursing interventions in 60 patients with osteoarthrosis. Patients were divided into infected group (n=22, with documented joint or systemic infection) and non-infected group (n=38, without infection), with each group split into intervention (infected: n=12; non-infected: n=20) and control (infected: n=10; non-infected: n=18) subgroups. Intervention subgroups received infection-preventive nursing (aseptic technique training, skin integrity management, immunization promotion), while controls received routine care. Primary outcomes included correlation between osteoarthrosis severity (Kellgren-Lawrence grade) and infection risk and post-intervention infection recurrence rate at 6 months. Secondary outcomes included C-reactive protein (CRP) levels, antibiotic use duration and wound healing time. Results showed significant positive correlation between Kellgren-Lawrence grade and infection risk ($r=0.65$, $p<0.01$). Intervention subgroups had lower recurrence rate (infected: 16.7% vs 60.0%; non-infected: 5.0% vs 27.8%, $p<0.05$). Infection-preventive nursing reduces infectious complications in osteoarthrosis patients, particularly those with severe disease and comorbidities.

Keywords: Osteoarthrosis; Skin integrity management; Kellgren-lawrence grade; C-reactive protein

Introduction

Infectious complications, including septic arthritis and soft tissue infections, are serious but underrecognized issues in osteoarthrosis patients, with incidence increasing from 2.3% in mild disease to 8.7% in severe cases[1]. Advanced osteoarthrosis-related joint deformity, skin breakdown and immunosuppressive medication use create vulnerability to infection, which can accelerate joint destruction and increase mortality[2]. This study investigates the osteoarthrosis-infection association and evaluates targeted nursing interventions, addressing the lack of infection-specific prevention protocols[3].

Methods

Study design and participants

Retrospective analysis of 60 patients with radiographically confirmed osteoarthrosis (knee: 40 cases, hip: 20 cases). Inclusion criteria: age 50-85 years; Kellgren-Lawrence grade I-IV; follow-up ≥6 months. Infected group defined as positive culture from joint aspirate or wound or clinical signs (erythema, warmth, purulence) with CRP >50 mg/L. Exclusion criteria: rheumatoid arthritis, recent joint surgery and congenital immunodeficiency.

Grouping & interventions

Control subgroups: Routine care (pain management, mobility advice).

Intervention subgroups: Added infection-preventive interventions:

- **Aseptic technique training:** Teaching patients/caregivers wound cleaning, dressing change and joint aspiration site care.
- **Skin integrity management:** Moisturizing protocols for dry skin, pressure ulcer prevention and early detection of skin cracks.
- **Immunization promotion:** Administering pneumococcal and influenza vaccines, monitoring vaccination status.
- **Antibiotic stewardship:** Educating on proper antibiotic use, preventing self-medication and resistance.

Outcome measures

- **Primary:** Correlation between Kellgren-Lawrence grade and infection risk; 6-month infection recurrence rate.
- **Secondary:** CRP levels (mg/L), antibiotic use duration (days) and wound healing time (days).

Statistical analysis

SPSS 26.0 used for Pearson correlation, χ^2 tests and independent t-tests. $p<0.05$ was significant.

Results

Osteoarthrosis-erythema-swelling association and baseline data

Significant positive correlation between Kellgren-Lawrence grade and infection risk ($r=0.65$, $p<0.01$). Infected group had higher initial Kellgren-Lawrence grade and comorbidity burden **(Table 1)**.

Table 1: Baseline Characteristics.

Characteristics	Infected Group (n=22)	Non-Infected Group (n=38)	p-value
Age (years, $\bar{x}\pm s$)	68.5±9.2	64.2±8.7	0.08
Male gender, n(%)	13(59.1)	20(52.6)	0.63
Affected joint (knee/hip)	15(68.2)/7(31.8)	25(65.8)/13(34.2)	0.85
Kellgren-Lawrence grade ($\bar{x}\pm s$)	3.2±0.7	2.1±0.8	<0.001
Diabetes mellitus, n(%)	9(40.9)	8(21.1)	0.08
Initial CRP (mg/L, $\bar{x}\pm s$)	87.3±32.5	12.6±8.3	<0.001
Immunosuppressant use, n(%)	7(31.8)	5(13.2)	0.07

Primary outcome

- **Severity association:** Each 1-grade increase in Kellgren-Lawrence grade correlated with 2.3-fold higher infection risk ($p<0.001$).
- **Intervention effect:** Intervention subgroups showed lower recurrence rate **(Table 2)**.

Table 2: 6-Month Infection Recurrence Rate.

Group	Intervention	Control	p-value
Infected Group (n=22)	2/12(16.7%)	6/10(60.0%)	0.028
Non-Infected Group (n=38)	1/20(5.0%)	5/18(27.8%)	0.049

Secondary outcomes

Intervention subgroups demonstrated significant improvements in all secondary measures **(Table 3)**.

Table 3: Secondary Outcomes at 6 Months.

Outcome	Infected Group	Non-Infected Group	p-value (intervention effect)
CRP (mg/L, $\bar{x}\pm s$)	Intervention: 15.2±6.3	Intervention: 8.7±4.2	<0.001
	Control: 38.5±12.1	Control: 16.3±7.5	-
Antibiotic duration (days, $\bar{x}\pm s$)	Intervention: 14.3±4.1	Intervention: 0	0.001
	Control: 26.8±7.5	Control: 5.2±3.1	-
Wound healing time (days, $\bar{x}\pm s$)	Intervention: 18.5±5.3	Intervention: 0	0.002
	Control: 32.6±8.7	Control: 12.5±4.8	-

Discussion

This study confirms severe osteoarthrosis correlates with higher infection risk, consistent with mechanisms involving joint instability-induced skin trauma and chronic inflammation-related immune dysfunction[4]. The 3.2-fold higher Kellgren-Lawrence grade in the infected group aligns with data that advanced joint degeneration disrupts protective barriers[5].

Infection-preventive interventions reduced complications through aseptic training, which addressed 60% of preventable infections from improper wound care[6]. Skin integrity management prevented entry points for pathogens, while immunization boosted host defence-particularly valuable in elderly patients with age-related immune decline[7]. Notably, the non-infected intervention subgroup achieved 5% infection rate, highlighting prevention value in high-risk populations[8].

Limitations include lack of long-term microbiological surveillance and potential confounding by unrecorded antibiotic use. Future studies should incorporate pathogen-specific analysis.

Conclusion

Osteoarthrosis severity correlates significantly with infectious complication risk. Infection-preventive nursing interventions effectively reduce recurrence, shorten recovery time and lower antibiotic use. These strategies are critical for managing infection risk in osteoarthrosis patients, especially those with severe disease.

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