Tooth infection during the chemotherapy for malignant musculoskeletal tumor

Yuka YAMADA¹, Seiji ASODA¹, Robert NAKAYAMA², Terumi TAKEUCHI¹, Yoko KUDO¹, Hiromasa KAWANA³,Taneaki NAKAGAWA¹
1; Department of Dentistry and Oral Surgery, Keio University School of Medicine, 2; Department of Orthopaedic Surgery, Keio University School of Medicine, 3; Department of Oral and Maxillofacial Implantology, Kanagawa Dental University,

Introduction

Tooth infection is often seen in the myelosuppression period after cytotoxic chemotherapy and can impede regular administration of the drugs, which could deeply affect the treatment outcome. To prevent this, we have implemented oral health management. In this study, the outcome of oral health management in the patients with malignant musculoskeletal tumor was retrospectively investigated.

Methods

Included: Patients receiving chemotherapy for malignant musculoskeletal tumor and professional oral health care from January 2012 to January 2019. Excluded: Edentulous patients / No examination of the periodontal pocket depth and panorama X-ray / Tumor or metastasis located in head and neck. Grading of tooth infection and neutropenia: CTCAE ver.5.0

※Tooth infection grade	G1	G2	G3
	-	Localized; local intervention indicated (e.g., topical antibiotic, antifungal, or antiviral)	IV antibiotic, antifungal, or antiviral intervention indicated; invasive intervention indicated

Results

Patient characteristics (n:71)

All / Oral management / Include		106 /102 / 71
Sex: male / female		37 / 34
Age (median)		43 (11-76)
Bone cancer / Soft tissue sarcoma		31 / 40
Stage (Bone cancer / Soft tissue sarcoma)	2	14 / 4
	3	0 / 19
	4	9 / 11
	recurrence or metastasis	7 / 7
PS: 0 / 1 / 2 / 3		7 / 46 / 17 / 1
Neutropenia G3 or G4		63

Dental characteristics (n:71)

Number of remaining teeth (median)	28 (2-32)
3rd molar	49
Semi-impacted or impacted 3rd molar	32
≥6mm periodontal pocket	14
Periapical lesion	33
Removal of dental calculus	71
Instruction for oral hygiene	71
Dental treatment	20
Tooth extraction	8

Tooth infection (n:10)

No	Malignant tumor	Chemotherapy	Tooth infection	Grade	Dental status	Neutropenia grade	FN	
1	Osteosarcoma	MTX + ADM + CDDP	periodontitis	2	<6mm periodontal pocket depth	4	No
2	Dedifferentiated liposarcoma	IFO + ADM	periodontitis	2	≥6mm periodontal pocket depth	0	No
3	Osteosarcoma	ADM	pericoronitis	2	semi-impacted	4	No
4	Osteosarcoma	IFO + VP16	apical periodontitis	2	<5mm periapical lesion size	2	No
5	Rhabdomyosarcoma	VCR + Act-D + CPA	pericoronitis	3	semi-impacted	4	Yes
6	Soft tissue sarcoma	GEM + DOC	periodontitis	2	≥6mm periodontal pocket depth	NA	No
7	Synovial sarcoma	IFO + ADM	pericoronitis	2	not-impacted	3	No
8	Malignant peripheral nerve sheath tumor	IFO + ADM	pericoronitis	2	not-impacted	3	No
9	Osteosarcoma	IFO + VP16	pericoronitis	-	impacted	0	No
10	Synovial sarcoma	IFO + ADM	pericoronitis	-	not-impacted	3	No

Discussion

Pericoronitis frequently occurred. Especially, in cases of semi-impacted or impacted 3rd molar, the extraction was invasive, and it may not have been in time for chemotherapy. Thus, these teeth tended to be left. The patients had other teeth with problems as well, so it was difficult to decide which tooth to treat. There may be other factors aside from radiographic image and periodontal pocket depth that predict tooth infection, such as poor oral hygiene.

Conclusions

Oral health management during chemotherapy for malignant musculoskeletal tumor was important. More studies are required to prevent febrile neutropenia from tooth infection.