実験的顎関節症モデルに対する組織学的、生化学的研究

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	作成者: 高塚, 茂行, Takatsuka, Shigeyuki
	メールアドレス:
	所属:
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2000 Fiscal Year Final Research Report Summary

Histologic and biochemical assessments on experimentally induced disk displacement of the craniomandibular joints.

Research Project

Project/Area Number

10671869

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Surgical dentistry

Research Institution

Kanazawa University

Principal Investigator

TAKATSUKA Shigeyuki Kanazawa University, School of Medicine, Oral and Maxillofacial Surgery, Assistant Professor, 医学部・附属病院, 講師 (00251926)

Co-Investigator(Kenkyū-buntansha)

NAKAGAWA Kiyomasa Kanazawa University, School of Medicine, Oral and Maxillofacial Surgery, Associate Professor, 医学部, 助教授 (30155676)

Project Period (FY)

1998 – 2000

Keywords

temporomandibular joint / rabbit / model of arthritic temporomandibular joint / disk repositioning surgery / fracture of rotational dislocation / fracture of mandible condyle / open reduction

Research Abstract

Anterior disk displacement was induced in the craniomandibular joint of the rabbits. A sutured thread was placed at the antero-lateral margin of retrodiscal tissue and fixed to infra-orbital portion of zygoma after 7mm anterior displacement of the disk. Postoperative changes were assessed at the 2nd, 3rd, 5th, 8th, and 24th week. Disk displacement induced hypertrophy of articular cartilage of the condyle at the 2nd and 3rd week, then developed disk perforation at the 5th week. Subsequently, degenerative arthritic changes were noted. Then, we devised the period of the secondary disk repositioning surgery at the 2nd and 3rd week after experimental disk displacement procedure. Consequently, animals that underwent secondary disk repositioning at the 2nd week showed recovery from hypertrophy and arthritic changes in the cartilage layer. However, secondary operation at the 3rd week showed no recovery, but progressive arthritic changes were noted in the cartilage. Their changes resembled animal condyles without secondary operation. These results indicated a limitation period of the application of disk repositioning procedure for the condition of anterior disk displacement.
This project includes another animal experiment relating to mandibular condyle fracture. An artificial rotational dislocation was performed on condyle of adolescent and adult rabbits, then healing process of the fractured fragments were observed. Fractures in the adolescent animals showed complete healing, regardless dislocation angle of the condyle. On the other hand, delayed and incomplete healing of the fractured fragments were noted among adult animals with rotational dislocation of the condyle. These results suggested that open reduction was advocated for condylar fracture in human adults patients. This phenomenon has been continuously investigated with the assessments for enzymatic activities at the fracture site.

Research Products (18 results)

All Other

All Publications (18 results)

[Publications] Masayoshi Narinobou: "Histological changes in the rabbit condyle following posterolateral disc perforation"Journal of Cranio-Maxillofacial Surgery. 28. 345-351 (2000)

[Publications] Koichiro Ueki: "Temporomandibular joint morphology and disk position in skeletal class III patients"Journal of Cranio-Maxillofacial Surgery. 28. 362-368 (2000)

[Publications] Akira Tanaka: "Expression of matrix metalloproteinase-2 and-9 in synovial fluid of the temporomandibular joint accompanied by anterior disc displacement"Journal of Oral and Pathological Medicine. 30. 59-64 (2001)

[Publications] Kiyomasa Nakagawa: "Somatosensory-evoked potential to evaluate the trigeminal nerve after sagittal split osteotomy"Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics. 91. 146-152 (2001)

[Publications] Akira Tanaka: "Expression of matrix metalloproteinase-2 in osteoarthritic fibrocartilage from human mandibular condyle"Journal of Oral and Pathological Medicine. 29. 314-320 (2000)

[Publications] Koichiro Ueki: "Condyle changes after contralateral mandibular osteotomy in the rabbit"Journal of Cranio-Maxillofacial Surgery. 54. 373-382 (1999)

[Publications] Kiyomasa Nakagawa: "New cephalometric images with a workstation : a preliminary report"Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics. 85. 329-333 (1998)

[Publications] 寺井功一: "下顎関節突起骨折の治癒経過に関する実験的研究"金沢大学十全医学会雑誌. 109巻6号. 424-436 (2000)

[Publications] 窪田善之: "顎関節円板整位術の有用性に関する実験的研究"金沢大学十全医学会雑誌. 108巻1号. 11-23 (1999)

[Publications] Masayoshi Narinobou: "Histological changes in the rabbit condyle following posterolateral disk perforation"Journal of Cranio-Maxillofacial Surgery. 28. 345-351 (2000)

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[Publications] Koichi Terai: "Exprerimental Study on Healing Process of Condylar Fracture-Comparison of Morphological Changes between Adolescent and Adult Rabbits-"Journal of the Juzen Medical Society. 109. 424-436 (2000)

[Publications] Yoshiyuki Kubota: "An Experimental Study on the Feasibility of Discoplasty in the Craniomandibular joint"Journal of the Juzen Medical Society. 108. 11-23 (1999)

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