Take-home messages

- Use of an in situ hybridisation assay in place of immunohistochemistry would identify more accurately those women who would benefit from trastuzumab therapy.
- Chromogenic in situ hybridisation (CISH) is as sensitive and as specific as fluorescence in situ hybridisation (FISH)
- CISH is more cost-effective than FISH

been in the borderline samples due to the slight difference in cut-off level between CISH and FISH.¹⁴ A HER2:CEP17 ratio of >2 is classed as amplified by FISH; however, with CISH (Zymed), a score of >5 HER2 signals is classed as amplified. A consensus should be reached on a clinically relevant cut-off value for amplification for both ISH protocols.

Other FISH/CISH discrepancies have been due to inadequate use of chromosome 17 correction and difficult histology.^{3,6} By using chromosome 17 correction in all low amplified cases, light microscopy for assessment of HER2 in the histological context of the tumour sample and having experienced histopathologists analysing all the slides, we have not encountered these discrepancies between FISH and CISH results leading us to believe that CISH can reliably be used to assess breast tumour samples for patient eligibility for trastuzumab therapy.

Acknowledgements

We would like to thank Roche Products Ltd for the funding received for this study. The authors are independent of the funding organisation which sought no control over the design or content of the study.

S Di Palma, N Collins, C Faulkes, B Ping, G Ferns, B Haagsma, G Layer, M W Kissin, M G Cook

Histopathology, Royal Surrey County Hospital, Egerton Road, Guildford, Surrey GU2 7XX, UK

Correspondence to: S. Di Palma, Histopathology, Royal Surrey County Hospital, Egerton Road, Guildford, Surrey GU2 7XX, UK; silvana.dipalma@royalsurrey.nhs.uk

doi: 10.1136/jcp.2006.043356

Accepted for publication 11 January 2007

Published Online First 5 February 2007

Competing interests: none declared.

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Histological findings of avulsion tear-type medial patellofemoral ligament injury in acute patellar dislocation

Acute patellar dislocation is a common injury that occurs during a variety of activities and accounts for 2–3% of knee injuries.¹ Since 1990, especially over the past 5 years, more attention has focused on the medial patellofemoral ligament (MPFL) of the medial retinacular components. In several biomechanical studies, the MPFL has proved to be the primary restraint to lateral translation of the patella among the medial patellar stabilisers, and many clinical findings have shown that acute patellar dislocation is associated with MPFL injuries at a high rate.^{2–9}

In 1999, Nomura⁶ classified MPFL injury in acute patellar dislocation into two types, avulsion tear and substantial tear. An avulsion tear is a detachment-type injury limited to the undersurface of the MPFL at the femoral attachment. It was suspected that this injury may result from a specific structure of the MPFL at the femoral attachment.

This study was to evaluate the histological findings of the avulsion tear-type injury of the MPFL in acute patellar dislocation.

Case report

A 23-year-old woman sustained initial dislocation of the left knee while climbing a step (case

1). Five days after the injury, we performed open MPFL surgery. From macroscopic observation at the time of the operation, an avulsion tear-type injury of the MPFL was found. The MPFL seemed to be intact, but when the ligament was lifted, the avulsed site was found (fig 1A,B).

An 18-year-old woman was injured when someone bumped against her, forcing her right knee to apply valgus and rotation force (case 2). Eleven days after the injury, we performed open MPFL surgery. From macroscopic observation, the MPFL seemed to be intact. A massive clot was present under the femoral attachment, and an avulsion tear was diagnosed.

Pathology

In the two cases, we obtained the histological samples of the injured MPFL at or near the femoral attachment, and histological findings were examined. The sections were stained with H&E.

The superficial layer of the MPFL in case 1 seemed almost intact. The hyalinised collagen bundles showed lamellar arrangement. In the deep layer, a granulation tissue response was encountered. The proliferation of capillaries and fibroblasts with a mild degree of infiltration of lymphocytes and histiocytosis was observed (fig 2).

In case 2 also, the superficial layer, composed of hyalinised lamellar collagen bundles, seemed almost intact. But in the deep layer, where the avulsion tear occurred, a granulation tissue response with accumulation of proliferating capillaries, fibroblastic cells, collagen fibres, and a few lymphoid cells, and mild degrees of interstitial oedema and haemorrhage were found. There was a small amount of fibrinous exudate on the torn surface of the ligament. There were no granuloma, vasculitis or neoplastic cells (fig 3).

Discussion

Many recent reports have shown that the MPFL is present in approximately all knees and is the most important restraint among the medial patellar stabilisers.^{2–9} The MPFL courses from the superior two-thirds of the medial patellar margin superoposteriorly to the medial femoral epicondyle or just distal to the adductor tubercle.^{2,10}

The MPFL narrows and thins as it approaches the femoral attachment.² It was expected that the MPFL near the femoral attachment would be weakest structurally, and, if an MPFL injury occurred, the femoral attachment could be the site of injury. In fact, a substantial tear generally occurs near or on the femoral attachment, but did not occur near the patellar attachment in our cases.^{6,9}

An avulsion tear of the MPFL was detected,^{6,9} which we could not foresee. The superficial fibres of the MPFL pass through the superoposterior portion of the medial femoral epicondyle and extend to the posteromedial capsule. The MPFL seems to have no bony attachment near the medial femoral epicondyle and directly connects to the posteromedial capsule. However, the undersurface of the MPFL at the superoposterior portion of the medial femoral epicondyle is firmly anchored to the bone. We termed this structural characteristic single-point fixation.^{2,6} Although the specific structure of the femoral attachment is a morphologically and anatomically weak point, it may be that this structure allows

Figure 1 Macroscopic photographs of case 1. (A) The medial patellofemoral ligament (arrowheads) seemed to be intact. A histological sample was obtained from the area shown by a rectangle. (B) When the medial patellofemoral ligament at the femoral attachment was lifted, the avulsed site (arrow) was found. P, patellar side; Po, posterior side; VMO, vastus medialis obliquus.

Figure 2 Histological finding of case 1. The superficial layer is almost intact. Haemorrhage and formation of granulation tissue are seen only in the deep layer. (H&E stain, magnification ×40).

Figure 3 Histological finding of case 2. The superficial layer of the injured medial patellofemoral ligament (MPFL) was almost intact. But in the deep layer, haemorrhage and formation of fibrosing granulation tissue are seen (H&E stain, magnification ×40).

slight movement at the attachment site. An avulsion tear of the MPFL could occur because of the specific structure of this femoral attachment. An avulsion tear is a detachment-type injury limited to the undersurface of the MPFL at the femoral attachment.

In the present study, we examined the avulsion tear-type injury histologically. In our two avulsion tear-type injury cases, the superficial layer of the injured MPFL was almost intact. But in the deep layer, haemorrhage and formation of granulation tissue were seen. The injured part of the MPFL was only in the deep layer at or around the femoral attachment. These histological findings correspond to the macroscopic findings which show that the avulsion tear-type injury is a detachment injury limited to the undersurface of the femoral attachment.

Acknowledgements

We thank Mrs Yuko Kato, Department of Pathology of Kawasaki Municipal Hospital for assistance in preparing the samples for light microscopy.

Motoyasu Inoue

Department of Orthopaedic Surgery, Isehara-Kyodo Hospital, Isehara, Japan

Eiki Nomura

Department of Orthopaedic Surgery, Kawasaki Municipal Hospital, Kawasaki-ku, Kawasaki, Japan

Hitoshi Sugiura

Department of Pathology, Kawasaki Municipal Hospital, Kawasaki-ku, Kawasaki, Japan

Shigeru Kobayashi

Department of Orthopaedics and Rehabilitation Medicine, Fukui University School of Medicine, Fukui, Japan

Correspondence to: Dr E Nomura, Department of Orthopaedic Surgery, Kawasaki Municipal Hospital, Kawasaki-ku, Kawasaki 210-0013, Japan; edk-nomura@spn1.speednet.ne.jp

doi: 10.1136/jcp.2005.033373

Accepted 19 September 2005

Competing interests: None declared.

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Mucin 2 (MUC2) and mucin 5 (MUC5) expression is not associated with prognosis in patients with radically resected ampullary carcinoma

Mucins are glycoproteins that are common on the surfaces of many epithelial cells. Under normal circumstances, mucins are known to play a protective role for epithelial tissues. In addition, their involvement in the differentiation of the epithelium, modulation of cell adhesion, as well as cell signalling has also been proposed.¹ Two main families can be distinguished: secreted mucins or gel-forming mucins (MUC2, MUC5AC, MUC5B, MUC6), and membrane-bound mucins (MUC1, MUC3, MUC4, MUC12, MUC17).² Alterations in the expression and in the structure of mucins have been reported in both pre-neoplastic and neoplastic lesions.³ The production of MUC2 or MUC5AC has been correlated, by a majority of non-invasive type tumours, with the expansive growth of the tumours that display lower levels of invasion and metastasis.⁴ A broad histomorphological spectrum of ampullary carcinomas of Vater make a reproducible histological classification difficult. Ampullary carcinomas positive for MUC2 have been associated with intestinal type tumour, whereas MUC5AC-positive ampullary carcinomas were related to pancreaticobiliary type.^{5–7} In ampullary carcinoma, immunohistochemical expression of MUC2 and MUC5 has never been correlated with survival of patients.

In order to investigate the potential prognostic role of MUC2 and MUC5 expression in ampullary carcinoma, we included in the present report 45 consecutive patients with