

Original article

An international opinion research survey of the etiology, diagnosis, therapy and outcome of Kienböck's disease (KD)[☆]

Analyse démographique internationale sur l'étiologie, le diagnostic, les thérapies et le pronostic de la maladie de Kienböck

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Abstract

Objectives. – Every fourth publication on Kienböck's disease (KD) is based for the most part on rather divergent expert opinion. We therefore surveyed expert opinion on KD in three European countries: (1) for the suspected aetiologies; (2) routinely used diagnostic tools; (3) recommended treatment and (4) expected outcome.

Methods. – A questionnaire consisting of 16 questions was handed out at the national meetings for surgery of the hand in Germany (DE), France (FR) in 2009 and in the United Kingdom (UK) in 2010.

Results. – Among the 126 surgeons who participated in the survey, 82 had a national diploma for surgery of the hand. None of the most commonly discussed etiopathological hypotheses were estimated as being very likely. Hand/arm vibration exposure was considered less likely among respondents in France and the UK than among respondents in Germany. Treatment recommendations are very heterogeneous for stage IIIB according to Lichtman.

Conclusions. – Expert opinions on diagnostic criteria, the pathogenesis and the choice of treatment are not consistent and may vary from one country to another.

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Keywords: Diagnosis; Etiopathogenesis; Kienböck's disease; Lunate necrosis; Osteonecrosis; Prognosis; Treatment

Résumé

Objectifs. – Un quart des publications sur la maladie de Kienböck est basé sur des avis d'experts, pour la plupart divergents. Nous avons donc réalisé un sondage d'experts dans trois pays européens concernant : (1) des hypothèses sur l'étiologie ; (2) les méthodes de diagnostic de routine ; (3) les formes de traitement recommandées ; (4) ainsi que les résultats obtenus.

Méthodes. – Un questionnaire composé de 16 questions a été distribué lors des congrès nationaux de chirurgie de la main en Allemagne (DE) et en France (FR) en 2009 ainsi qu'au Royaume-Uni (UK) en 2010.

[☆] More than six authors have been necessary to design, execute and analyse the study since it has been conducted in three different European countries.

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Résultats. – Parmi les 126 chirurgiens ayant participé au sondage, 82 étaient des chirurgiens de la main diplômés. Parmi les hypothèses étiologiques les plus communément discutées, aucune n’a été estimée très probable. L’hypothèse sur les vibrations main-bras a été considérée moins probable en France et au Royaume-Uni qu’en Allemagne. Les recommandations de traitement étaient très hétérogènes pour le stade IIIB de Lichtman.

Conclusions. – Les opinions d’experts sur les critères diagnostiques, les hypothèses sur l’origine ainsi que les traitements recommandés varient considérablement d’un pays à l’autre.

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Mots clés : Diagnostic ; Étiopathogénie ; Maladie de Kienböck ; Nécrose du semi-lunaire ; Ostéonécrose ; Pronostic ; Traitement

1. Introduction

Due to the rarity of Kienböck’s disease (KD), there is little evidence-based knowledge of the disease. Every fourth article published on the etiology of KD is based on expert opinion and 90% reaches evidence-based level IV. The discussions on the etiology of KD remain controversial and a convincing amount of evidence for a causal relationship is lacking. Traditionally, KD (international classification of diseases coding, ICD: M93.1) is recognized as an occupational disease caused by mechanical vibration (European schedule of occupational diseases number: 505.01) in some European countries like Germany and France, whereas this is not the case in others such as Austria despite the effort for a European harmonization [1].

Uncertainties about the etiopathology explain the difficulties in identifying pathognomonic signs needed to exclude potential, differential diagnoses [2]. In a review of three studies (22 cases) concerning the diagnostic performance of MRI without a contrast agent for KD, the sensitivity has been estimated to average 100% and the specificity 75% [3]. In contrast, a retrospective evaluation of 203 MRI exams, with signal alteration of the lunate, led to a primary diagnosis in only 67% of the cases (1.5 T MRI with a contrast agent, complemented by the evaluation of X-rays of the wrist on at least two planes and the data from the medical chart) [2]. Although a rational diagnostic procedure for KD has been proposed [4], it is rarely referred to and there has been no internationally accepted consensus on a combination of imaging modalities necessary to diagnose KD (the “golden standard” for diagnosis).

The elucidation of the true relationship between negative ulnar variance and KD is critically important, as most operative treatments are based on the premise of a causal relationship. Although little is known about the natural history of KD [5–8], comparative studies have reported disappointing results of surgical treatment [9–13]. More recently, a meta-analysis has suggested that there is insufficient data to determine whether the outcome of any intervention is superior to placebo or the natural history of the disease [14]. Most treatment evaluations are based on retrospective case series with postoperative assessment of subjective parameters such as pain, active range of motion and grip strength. Wada observed a striking discrepancy between subjective outcome parameters and radiologic parameters showing KD progression after radial shortening osteotomy [15]. Etiology, diagnosis, therapy and outcome of KD are subject to controversial discussions with

little evidence-based knowledge. In order to draw up an inventory of the different approaches to KD, we carried out a survey amongst experts in Germany, France and the UK.

2. Materials and methods

A questionnaire composed of 16 questions was handed out at three national meetings respectively in Germany, France and the UK. According to the organization panel of the meetings, 487 surgeons attended the meeting in Tübingen, Germany (DGH, 2009), 545 in Paris (SFCM, 2009) and 292 in London (BSSH, 2010). The questionnaire addressed the most commonly discussed etiopathological hypotheses, diagnostic imaging, therapies and expected outcomes of KD. Demographic parameters were assessed to evaluate the surgeon’s experience. The survey questionnaire asked respondents to estimate the likeliness of every one of eight suggested etiopathological hypotheses of KD on a verbal scale of 1 “very unlikely” to 5 “very likely”. The proposed hypotheses were:

- hand/arm vibration (e.g. from the use of a pneumatic hammer);
- fractures, luxations or severe contusions;
- negative ulnar variance;
- venous congestion;
- decreased arterial perfusion due to trauma;
- arteriosclerotic alterations;
- association with rheumatic diseases;
- glucocorticoid-induced osteonecrosis.

Two clinical case scenarios were presented with X-ray and MRI images. The first clinical case described a 21-year-old man with an 18-month history of left wrist pain without prior trauma. Upon clinical examination, the patient presented painful swelling of the dorsal wrist with a range of motion close to normal. Fig. 1 shows the X-rays and MRI images of the wrist. The radiologist had confirmed the diagnosis of KD. No further information concerning the disease stage (IIIB according to Lichtman) or the ulnar variance (–2 mm) was given in the survey questionnaire. The surgeons were asked to state their expectations concerning the outcome of the recommended treatments of the first clinical case, assuming the patient had an office job and underwent specialized rehabilitation after treatment. The second clinical case scenario described a 23-year-old woman with ongoing dorsal wrist pain over a period of

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