

Identification of knee osteoarthritis patients in the claims database

¹한양대학교 서울병원 류마티스내과, ²경북대학교 통계학과, ³중앙대학교 약학대학, ⁴안동대학교 정보통계학과

*박하림¹, 임슬기², 김달호², 정선영³, 장은진⁴, 성윤경¹, 조수정¹

Objective: To identify the operational definition of knee osteoarthritis (OA) among OA patients in the claims database. **Methods:** The claims data of patients with OA diagnostic codes for any sites (M15 to M19) for the year of 2014 was extracted from single academic referral hospital. After excluding patients with inflammatory arthritis and age less than 50, we made population data for total OA. With reviewing all the medical records, radiographic knee OA(KL grade 1-4) was considered as the gold standard. We evaluated the sensitivity, specificity and positive predictive value (PPV) of three kinds of operational definitions; 1) knee OA code(M17), 2) code of any site OA (M15 to M19) with procedure of knee X-ray, and 3) 1) or 2). **Results:** A total of 7,959 any OA patients were included. Among them, 74% were woman. The PPV of knee OA code was 0.76 (95% CI 0.74-0.78), but its sensitivity was only 0.41 (95% CI 0.39-0.43). The sensitivity of any OA code with procedure of knee X-ray was decreased to 0.34 (95% CI 0.32-0.36), but its PPV was remained as 0.75 (95% CI 0.72-0.75). When we combined the above two definitions, the sensitivity increased to 0.52 (95% CI 0.50-0.53), while preserving relatively high PPV of 0.74 (95% CI 0.72-0.75). **Conclusions:** We suggest that knee OA patients could be identified with the combined definitions of knee OA code(M17) or any OA code(M15 to M19) with performing of knee X-ray in the claims database.

Table. Validity of operational definition

	Sensitivity (95%CI)	Specificity (95%CI)	PPV (95%CI)	NPV (95%CI)
≥1 visit during one calendar year with knee OA code	0.41 (0.39, 0.43)	0.91 (0.9, 0.92)	0.76 (0.74, 0.78)	0.68 (0.68, 0.69)
≥1 visit during one calendar year with any OA code and Knee x-ray	0.34 (0.32, 0.36)	0.92 (0.91, 0.92)	0.75 (0.72, 0.76)	0.66 (0.66, 0.67)
≥ 1 visit during one calendar year with knee OA code or ≥1 visit during one calendar year with any OA code with and knee x-ray	0.52 (0.5, 0.53)	0.87 (0.86, 0.88)	0.74 (0.72, 0.75)	0.72 (0.71, 0.72)

PPV; positive predicted value, NPV; negative predicted value, CI; confidence interval

Raynaud's phenomenon in workers with chronic vibration exposure

서울의료원 ¹내과, ²해의학과

*권정아¹, 권현숙², 이은정³, 최병용⁴

Background: Workers using hand-held vibrating tools commonly experience not only numbness and pain in arms and hands but also Raynaud phenomenon (RP) in which paroxysmal ischemia in digits or hands is provoked by cold weather. Previous studies have confirmed the connection between the vibration of hand-held tools and disturbances in the microcirculation of the fingers, which is known as "hand-arm vibration syndrome (HAVS)". However, the lack of objective tests for evaluating the syndrome makes it difficult to estimate the extent of the disability in worker's compensation. The present study is to evaluate occupational RP in the symptomatic workers with chronic vibration exposure by using cold-water provocation methods.

Methods: The research was carried out in Seoul medical center from March 2015 to February 2017. All subjects who had past history of vibration exposure and symptoms suggestive of HAVS underwent thorough physical, laboratory exam, digital blood flow scintigraphy, nail-fold capillary microscopy (NCM), nerve conduction study, cold provocation tests. Skin color, temperature (TB, T0, T10), turgor of digits were measured before and 0, 10 minutes after both hand immersion in 10°C water for 10 minutes. A blanching score in RP was recorded and staged using modified version of the Stockholm Workshop Scale. **Results:** Among total 122 cases (coal miner 95.1%, mean duration of the exposure 27.1years), 47 (38.5%) had carpal tunnel syndrome and 24(19.7%) had RP. Although the digital blood flow scan and NCM showed positive finding in 115 cases(94.3%) and 48 cases(39.3%), there was no significant difference depending on the presence or severity of RP. Typical skin color changes after cold-water provocation were observed in 10 of 24 RP cases (41.7%). In RP cases, ΔT10 (TB-T10) were significantly higher and recovery rates of the digit temperature (ΔT10/ΔT0) were lower than those in non-RP cases (both $p < 0.001$). Increased skin turgor after cold provocation was associated with higher ΔT10 ($p = 0.026$).

Conclusions: Our study shows that the delayed recovery rate of digit temperature after cold-water provocation is simple and helpful method to detect RP in symptomatic workers with chronic vibration exposure.