



UNIVERSITAS  
GADJAH MADA

## Korelasi Hiperlipidemia dengan Osteoarthritis Foto Polos Sendi Panggul

TONI HENDRAWAN MH, Dr.dr. Lina Choridah, Sp.Rad (K) PRP; Dr.dr. Bambang Supriyadi, Sp.Rad (K) MSK, MM.

Universitas Gadjah Mada, 2022 | Diunduh dari <http://etd.repository.ugm.ac.id/>

# KORELASI HIPERLIPIDEMIA DENGAN DERAJAT OSTEOARTRITIS FOTO POLOS SENDI PANGGUL

Toni Hendrawan Mardi Husodo<sup>1</sup>, Lina Choridah<sup>2</sup>, Bambang Supriyadi<sup>2</sup>

<sup>1</sup> Residen dan <sup>2</sup> Staf Departemen Radiologi, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan Universitas Gadjah Mada, Yogyakarta

## INTISARI

**Latar belakang :** Osteoarthritis (OA) adalah penyakit yang menimbulkan disabilitas. OA dapat dikatakan penyakit endemik di seluruh dunia, diperkirakan 30,8 juta orang dewasa di Amerika Serikat dan 300 juta orang di seluruh dunia menderita OA. Penelitian pada populasi menunjukkan bahwa OA panggul dua kali lebih sering terjadi pada perempuan dibandingkan pria. OA metabolik adalah OA yang dikaitkan dengan sindrom metabolik, dan obesitas. Peradangan akibat metabolik atau disebut metainflamasi, telah diketahui terlibat dalam patogenesis OA. Obesitas cenderung memiliki hiperlipidemia karena perubahan metabolisme lemak. Penelitian oleh Tsezou et. al., menunjukkan bahwa kondrosit benar-benar dapat memasukkan lemak ke dalam jaringan kartilago, dengan ditemukannya LDL teroksidasi (Ox-LDL) di dalam cairan synovial. Pada saat kondrosit berdiferensiasi dengan mengalami ossifikasi endokondral, maka hiperlipidemia membuat akumulasi kolesterol dalam kartilago, menginisiasi inflamasi dan destruksi kartilago tulang sendi.

**Tujuan penelitian :** Mengetahui apakah terdapat hubungan korelasi antara hiperlipidemia dengan derajat osteoarthritis sendi panggul.

**Bahan dan Cara :** Penelitian ini adalah penelitian observasional analitik korelasi *cross-sectional* dengan data sekunder secara *consecutive non-random sampling* di RSUP Dr. Sardjito Yogyakarta. Subjek penelitian adalah pasien dengan osteoarthritis sendi panggul derajat 1 hingga 4, sesuai klasifikasi Kellgren-Lawrence, memiliki citra radiologi *x-ray* sendi panggul proyeksi AP di Instalasi Radiologi RSUP Dr. Sardjito Yogyakarta, dan hasil pemeriksaan dari salah satu atau lebih, kadar kolesterol total, LDL, atau trigliserida serum yang lebih dari normal, serta tidak memiliki riwayat trauma atau infeksi pada sendi panggul tersebut. Sebelum dilakukan interpretasi sampel berupa citra *x-ray* sendi panggul proyeksi AP, dilakukan uji reliabilitas dengan menghitung nilai kappa *intra-observer* dan *inter-observer*. Derajat OA pada foto polos sendi panggul dikorelasikan dengan hiperlipidemia dengan uji korelasi.

**Hasil :** Didapatkan 38 subjek penelitian yang memenuhi kriteria inklusi dan eksklusi penelitian. Jenis kelamin laki-laki 14 subjek (36,8%), dan perempuan 24 subjek (63,2%). Sebaran usia 26-35 tahun sebanyak 1 subjek (2,6%), 36-45 tahun sebanyak 4 subjek (10,5%), 46-55 tahun sebanyak 11 subjek (28,9%), 56-65 tahun sebanyak 9 subjek (23,7%), dan >65 tahun sebanyak 13 subjek (34,2%). Mean kolesterol total 213,11 mg/dL, LDL 140,29 mg/dL, HDL 44,63 mg/dL, serta Trigliserid 169,89 mg/dL. Tidak terdapat korelasi antara hiperlipidemia dengan derajat OA foto polos panggul. Namun pada analisis subkelompok berdasar jenis kelamin, terdapat korelasi positif, kuat dan signifikan antara kolesterol total beserta LDL dengan derajat OA foto polos panggul kiri pada subjek perempuan,  $r=0,54$ ;  $p=0,005$  (kolesterol total),  $r=0,52$ ;  $p=0,007$  (LDL). Analisis multivariat didapatkan korelasi signifikan antara riwayat obat antikolesterol dengan derajat OA foto polos panggul kiri subjek perempuan ( $p=0,042$ ), sedangkan kolesterol total dan LDL menjadi tidak signifikan, hal ini mengindikasikan bahwa riwayat obat antikolesterol merupakan faktor *confounding* yang mempengaruhi analisis korelasi.

**Kesimpulan :** Tidak terdapat korelasi antara hiperlipidemia dengan derajat OA foto polos panggul. Pada analisis subkelompok berdasar jenis kelamin, terdapat korelasi positif, kuat dan signifikan antara kolesterol total beserta LDL dengan derajat OA foto polos panggul kiri pada subjek perempuan,  $r=0,54$ ;  $p=0,005$  (kolesterol total),  $r=0,52$ ;  $p=0,007$  (LDL). Riwayat obat antikolesterol merupakan faktor *confounding* yang mempengaruhi analisis korelasi.

Kata kunci : Osteoarthritis, Kellgren-Lawrence, Hiperlipidemia, Foto polos panggul

## CORRELATION OF HYPERLIPIDEMIA WITH DEGREE OF PLAIN PHOTO OSTEOARTHRITIS OF THE HIP JOINT

Toni Hendrawan Mardi Husodo<sup>1</sup>, Lina Choridah<sup>2</sup>, Bambang Supriyadi<sup>2</sup>

<sup>1</sup> Resident and <sup>2</sup> Staff of Department of Radiology, Faculty of Medicine, Public Health and Nursing,  
Gadjah Mada University, Yogyakarta

### ABSTRACT

**Background :** Osteoarthritis (OA) is a disease that gives rise to disability. OA can be said to be an endemic disease worldwide, an estimated 30.8 million adults in the United States and 300 million people worldwide suffer from OA. Research on the population shows that pelvic OA is twice as common in women as in men. Metabolic OA is an OA that is associated with metabolic syndrome, and obesity. Metabolic inflammation, otherwise called meta-inflammation, has been known to be involved in the pathogenesis of OA. Obesity tends to have hyperlipidemia due to changes in fat metabolism. Research by Tsezou et. al., suggesting that chondrocytes can actually introduce fat into cartilage tissue, with the discovery of oxidized LDL (Ox-LDL) in the synovial fluid. When chondrocytes differentiate by undergoing endochondral ossification, hyperlipidemia creates an accumulation of cholesterol in cartilage, inducing inflammation and digestion of joint bone cartilage.

**Objective :** Determine whether there is a correlation between hyperlipidemia and the degree of osteoarthritis of the hip joint.

**Materials and Methods:** This study is an analytical observational study of *cross-sectional* correlation with secondary data in *consecutive non-random sampling* at RSUP Dr. Sardjito Yogyakarta. The subjects of the study were patients with osteoarthritis of the hip joint of degrees 1 to 4, according to the Kellgren-Lawrence classification, had x-ray radiological images of the hip joint projected AP at the Radiology Institute of RSUP Dr. Sardjito Yogyakarta, and examination results from one or more, total cholesterol, LDL, or serum triglyceride levels that were more than normal, and did not have a history of trauma or infection in the hip joint. Before interpreting the sample in the form of an x-ray image of the hip joint of the AP projection, a reliability test was carried out by calculating the kappa values of intra-observer and *inter-observer*. The degree of OA in a plain photo of the hip joint is correlated with hyperlipidemia by correlation assay.

**Results:** 38 research subjects were obtained who met the research inclusion and exclusion criteria. Male sex 14 subjects (36.8%), and female 24 subjects (63.2%). The distribution of ages 26-35 years was 1 subject (2.6%), 36-45 years old as many as 4 subjects (10.5%), 46-55 years as many as 11 subjects (28.9%), 56-65 years as many as 9 subjects (23.7%), and >65 years as many as 13 subjects (34.2%). Mean total cholesterol 213.11 mg/dL, LDL 140.29 mg/dL, HDL 44.63 mg/dL, and Triglycerides 169.89 mg/dL. There was no correlation between hyperlipidemia and OA degrees of pelvic plain photographs. However, in the analysis of subgroups based on sex, there was a positive, strong and significant correlation between total cholesterol and LDL with the degree of OA of the left pelvic plain photo in female subjects,  $r=0.54$ ;  $p=0.005$  (total cholesterol),  $r=0.52$ ;  $p=0.007$  (LDL). Multivariate analysis found a significant correlation between the history of anticholesterol drugs and the degree of OA of the left pelvic plain photo of the female subjects ( $p=0.042$ ), while total cholesterol and LDL became insignificant, indicating that the history of anticholesterol drugs was a *confounding* factor influencing the correlation analysis.

**Conclusion :** There is no correlation between hyperlipidemia and OA degrees of plain pelvic photos. If there was a subgroup analysis based on sex, there was a positive, strong and significant correlation between total cholesterol and LDL with OA degrees of plain photos of the left pelvis in female subjects,  $r=0.54$ ;  $p=0.005$  (total cholesterol),  $r=0.52$ ;  $p=0.007$  (LDL). Anticholesterol drugs are *confounding* factors that influence correlation analysis.

**Keywords :** Osteoarthritis, Kellgren-Lawrence, Hyperlipidemia, Plain photo of pelvis