**Table 1**. Gender-related differences in the prevalence of and relevant molecules to vascular calcification

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Authors | Country | Time | CKD stage | Sample size | Findings | Data | Calcification assessment method | Ref |
| Renaud *et al* | France | 1988 | 5D (HD) | 24 | Male increase more rapid | Correlation coefficient for male vs. annual calcification increase = 1.97, *p* < 0.01 | Lumbosacral radiography for linear calcifications involving the abdominal aorta, iliac and femoral arteries | (1) |
| Oprisiu *et al* | France | 2002 | 5D (HD) | 24 | Male more likely to progress | Male significant correlation with calcification extension | Pelvic and lumbar lateral radiography | (2) |
| Sigrist *et al* | United Kingdom | 2006 | 4-5D | 134 | Male common | Calcification tertiles 3rd vs. 2nd vs. 1st, male 81% vs. 71% vs. 46%, *p* < 0.001 | Superficial femoral artery in computed tomography | (3) |
| Mazzaferro *et al* | Italy | 2007 | 5D, 5T | 100 | Male more severe | Male dialysis vs. male transplant (Tx) vs. female dialysis vs. female transplant, 1944 vs. 945 vs. 157 vs. 35, *p* < 0.02 | Coronary artery calcification (Agatston score) | (4) |
| Gelev *et al* | Macedonia | 2008 | 5D (HD) | 150 | Male common | VC prevalence: male vs. female, 87.9% vs. 61.0%, *p* < 0.03  Intimal VC prevalence: male vs. female, 53.8% vs. 32.2%, *p* < 0.02  Medial VC prevalence: male vs. female, 34.1% vs. 28.8%, *p* > 0.05 | Pelvic antero-posterior radiography | (5) |
| Schlieper *et al* | Serbia | 2008 | 5D (HD) | 212 | Male common | With vs. without, male 78% vs. 47%, *p* < 0.0001 | Vascular access calcification on plain radiography | (6) |
| Morena *et al* | France | 2009 | 1-5 | 133 | Male common | Severe vs. minor, 73.6% vs. 36.1%, *p* < 0.0001 | Coronary artery calcification (Agatston score) | (7) |
| Jean *et al* | France | 2009 | 5D (HD) | 161 | Male more severe | High VC score (3) vs. no VC (score 0), male 77% vs. 45%, *p* < 0.05 | Multi-site plain radiography involving pelvis, lumbar, knee, right hand, right arm, chest, skull, and orthopantomogram | (8) |
| Chiu *et al* | United States | 2010 | Proteinuric (1-5) | 225 | Neutral | Group 4 (severe) vs. 3 vs. 2 vs. 1, male 61% vs. 64% vs. 47% vs. 45%, *p* = 0.09 | Coronary artery calcification (Agatston score) | (9) |
| Al-Rifai *et al* | Lebanon | 2011 | 5D (HD) | 43 | Neutral | No association between VC and gender | Hand X-rays | (10) |
| Chue *et al* | United Kingdom | 2012 | 3 | 120 | Male common | Male vs. Female, 67% vs. 43%, *p* = 0.01 | Lumbar spine lateral radiography | (11) |
| He *et al* | United States | 2012 | 2-4 | 2018 | Male more severe | Score >100 vs. 0-100 vs. 0, male 63.6% vs. 53.3% vs. 41.9%, *p* < 0.0001 | Coronary artery calcification (Agatston score) | (12) |
| Chang *et al* | South Korea | 2012 | 5D (HD) | 289 | Neutral | Severe vs. modest calcification, male 41.8% vs. 44.7%, *p* = 0.066 | Lumbar spine lateral radiography | (13) |
| Shu *et al* | Taiwan | 2012 | 5T | 99 | Male more severe | Group 5 (severe) vs. 4 vs. 3 vs. 2 vs. 1, male 66.7% vs. 53.3% vs. 63.6% vs. 65.0 vs. 29.3%, *p* = 0.027 | Coronary artery calcification (Agatston score) | (14) |
| Craver *et al* | Spain | 2013 | 3-4 | 178 | Male more severe | Lumbar Kauppila score >5 vs. 1-5 vs. 0, male 83% vs. 80% vs. 70%, *p* = 0.017 | Lumbar spine lateral radiography | (15) |
| Claes *et al* | Belgium | 2013 | 5T | 115 | Neutral | With vs. without, male 72% vs. 55.4%, *p* = 0.16 | Lumbar spine lateral radiography | (16) |
| Maharem *et al* | Egypt | 2013 | 5, 5D, 5T | 73 | Neutral | VC presence vs. absence, male 57.9% vs. 31.6%, *p* = 0.056 | Pelvic and hand plain radiography | (17) |
| Lee e*t al* | Taiwan | 2014 | 5D (HD) | 712 | Neutral | Group 3 (severe) vs. 2 vs. 1 vs. none, male 38.1% vs. 42.2% vs. 45.7% vs. 43.8%, *p* = 0.606 | Aortic arch calcification on chest radiography | (18) |
| Harada *et al* | Brazil | 2014 | 2-5 | 117 | Male more severe | Score >0 vs. score =0, male 78.7% vs. 42.9%, *p* < 0.001 | Coronary artery calcification (Agatston score) | (19) |
| Komatsu *et al* | Japan | 2014 | 5D (HD) | 301 | Female common | Grade 2+3 vs. 1 vs. no calcification, male 58.7% vs. 56.3% vs. 77.8%, *p* = 0.0009 | Aortic arch calcification on chest radiography | (20) |
| Qureshi *et al* | Sweden | 2015 | 5T | 89 | Male more severe | Moderate-severe vs. non-minimal, male 76% vs. 54%, *p* = 0.04 | Biopsy-verified calcification in epigastric arteries | (21) |
| Jean *et al* | France | 2016 | 5D (HD) | 227 | Neutral | Group 3 (severe) vs. 2 vs. 1, male 59.7% vs. 55.6% vs. 59.2%, *p* > 0.05 | Lumbar spine lateral radiography | (22) |
| Turan *et al* | Turkey | 2016 | 5D (HD) | 224 | Male more severe | Group 4 (severe) vs. 3. vs. 2 vs. no calcification, male 56% vs. 59% vs. 38% vs. 41%, *p* = 0.003 | Coronary artery calcification (Agatston score) | (23) |
| Jankovic *et al* | Serbia | 2017 | 5D (HD) | 90 | Male common | With vs. without calcification, male 66.1% vs. 35.3%, *p* = 0.008 | Forearm AVF plain radiography | (24) |
| Kahn *et al* | Austria | 2017 | 5T | 205 | Male more severe, segment-specific | Aorta: male vs. female, 2.0 vs. 1.5, *p* = 0.511  Right common iliac artery: male vs. female, 1.0 vs. 1.0, *p* = 0.139  Total iliac artery: male vs. female, 1.00 vs. 0.50, *p* = 0.003  External iliac artery: male vs. female, 1.0 vs. 0.0, *p* <0.001 | Pelvic computed tomography | (25) |
| Chen *et al* | Sweden | 2017 | 5D, 5T | 240 | Neutral | Score > 100 vs. ≤ 100, male 68% vs. 57%, *p* = 0.052 | Coronary artery calcification (Agatston score) | (26) |
| Disthabanchong *et al* | Thailand | 2018 | 2-5D, 5T | 419 | Female more severe (subgroup) | AAC score > 6 vs. ≤ 6 in CKD stage 2 -5, male 44.4% vs. 62.6, p < 0.05  In male with stage 5D, 50% vs. 50.5% (P > 0.05)  In male with stage 5T, 67.9% vs. 58.5% (p > 0.05) | Lumbar spine lateral radiography | (27) |
| Okamoto *et al* | Japan | 2018 | 5D (HD) | 184 | Male more likely to worsen | Annual progression rapid vs. slow, male 53% vs. 27%, *p* = 0.008 | Abdominal aorta calcification on computed tomography | (28) |
| Nitta *et al* | Japan | 2018 | 5D (HD) | 216 | Female more severe | Group 3 (severe) vs. 2 vs. no calcification, female 47.5% vs. 40.9% vs. 23.1%, *p* < 0.0001 | Aortic arch calcification on chest radiography | (29) |
| Tangvoraphonkchai *et al* | United States | 2019 | 5D (PD) | 24 | Female increase more common | Increased vs. stable PWV, male 33.3% vs. 75%, *p* < 0.05 | Pulse wave velocity | (30) |
| Jansson *et al* | Sweden | 2019 | 3-4 | 84 | Neutral | With vs. without AAC, male 79% vs. 67%, *p* = 0.351 | Abdominal aortic calcification on computed tomography | (31) |
| Hou *et al* | Taiwan | 2019 | 5D (HD) | 120 | Neutral | High vs. low, male 52.8% vs. 47.8%, *p* = 0.851 | Pulse wave velocity | (32) |

*AAC, abdominal aortic calcification; CKD, chronic kidney disease; HD, hemodialysis; LAD, left anterior descending; PD, peritoneal dialysis; VC, vascular calcification*

**Table 2**. Gender-related risk of vascular calcification in existing studies

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Author | Country | Time | CKD stage | Sample size | Findings | Results | Calcification assessment method | Ref |
| Ishimura *et al* | Japan | 2002 | 5D (HD) | 421 | Male at risk (subgroup) | In diabetics, male OR 3.38 (1.289-8.860), *p* = 0.0019  In non-diabetics, male OR 1.328 (0.252-6.997), *p* = 0.7376 | Digital artery on hand radiography | (33) |
| Raggi *et al* | United States and Europe | 2002 | 5D (HD) | 205 | Male at risk | Female β = -0.587547, p = 0.0167 | Coronary artery calcification | (34) |
| Nishizawa *et al* | Japan | 2004 | 5D (HD) | 332 | Male at risk | Male OR 3.380 (1.289-8.860), *p* = 0.0019 | Digital artery on hand radiography | (35) |
| Sigrist *et al* | United Kingdom | 2006 | 4-5D | 134 | Male at risk | Female β = -2.108, *p* < 0.001 | Superficial femoral artery in computed tomography | (3) |
| Jung *et al* | South Korea | 2006 | 5D (HD) | 40 | Male deteriorate rapidly | For calcification progression at 5-yr, male β = 1.365, *p* = 0.04 | Coronary artery calcification (Agatston score) | (36) |
| Mazzaferro *et al* | Italy | 2007 | 5D, 5T | 100 | Male at risk | Male OR 10.5 (3.2–34.4), *p* < 0.0001 | Coronary artery calcification (Agatston score) | (4) |
| Sigrist *et al* | United Kingdom | 2007 | 4-5D | 134 | Male deteriorate rapidly | For calcification progression at 2-yr, male OR 8.82 (1.82 to 42.65), *p* = 0.007 | Superficial femoral artery calcification on computed tomography | (37) |
| Schlieper *et al* | Serbia | 2008 | 5D (HD) | 212 | Male at risk | Male OR 3.95 (1.89–8.27), *p* = 0.0001 | Vascular access calcification on plain radiography | (6) |
| Bellasi *et al* | United States | 2008 | 5D | 142 | Male more severe (subgroup) | For coronary artery, male β = 735.82, p = 0.0366  For thoracic aorta, gender *p* > 0.05 | Coronary artery calcification (Agatston score) and thoracic aorta calcification | (38) |
| Morena *et al* | France | 2009 | 1-5 | 133 | Male more severe | Male OR 4.95 (2.36–10.37), *p* < 0.0001 | Coronary artery calcification (Agatston score) | (7) |
| Jean *et al* | France | 2009 | 5D (HD) | 161 | Neutral | Female OR 0.79 (0.3 – 1.8), *p* = 0.5 | Multi-site plain radiography involving pelvis, lumbar, knee, right hand, right arm, chest, skull, and orthopantomogram | (8) |
| Schlieper *et al* | Serbia | 2009 | 5D (HD) | 194 | Male at risk | For composite score, male OR 2.32 (1.19–4.52), *p* = 0.014  For Adragao score, male OR 2.75 (1.41–5.38), *p* = 0.003 | Pelvic, hand, arm plain radiography and echocardiography | (39) |
| Chiu *et al* | United States | 2010 | Proteinuric (1-5) | 225 | Male at risk | Male with significantly higher probability of more severe VC (*p* = 0.01) | Coronary artery calcification (Agatston score) | (9) |
| Sumida *et al* | Japan | 2010 | 5D | 135 | Neutral | Gender not associated with calcification | Carotid artery calcification on computed tomography | (40) |
| Manghat *et al* | United Kingdom | 2011 | 1-4 | 145 | Neutral | Male β = 0.06, p =0.54 | Arterial Stiffness | (41) |
| Tamei *et al* | Japan | 2011 | 5D (HD) | 127 | Male deteriorate rapidly | For calcification progression at 5-yr, male β = 0.969, *p* = 0.0192 | Aortic arch calcification on chest radiography | (42) |
| Chue *et al* | United Kingdom | 2012 | 3 | 120 | Male at risk | Female β = -0.34 (-13.45 - -4.48) | Lumbar spine lateral radiography | (11) |
| Shu *et al* | Taiwan | 2012 | 5T | 99 | Male more severe | Male β = -1.61, p = 0.0021 | Coronary artery calcification (Agatston score) | (14) |
| Craver *et al* | Spain | 2013 | 3-4 | 178 | Male at risk | For AAC severity, male β = 1.237 (0.058-2.417), *p* = 0.04  For severe AAC, male OR 4.218 (1.403-14.207), p = 0.014 | Lumbar spine lateral radiography | (15) |
| Pateinakis *et al* | Greece | 2013 | 5D (HD) | 81 | Neutral | β = -0.128, *p* = 0.15 | Pulse wave velocity | (43) |
| Harada *et al* | Brazil | 2014 | 2-5 | 117 | Male at risk | Male OR 4.92 (2.07–11.70), *p* < 0.01 | Coronary artery calcification (Agatston score) | (19) |
| Vipattawat *et al* | Thailand | 2014 | 5, 5D,5T | 261 | Neutral | Among 5T patients, OR 2.49 (0.87–7.14), *p* = 0.09  Among 5 and 5D patients, OR 2.02 (0.71-5.78), *p* = 0.19 | Pelvic and lumbar spine lateral radiography  (Total vascular calcification score) | (44) |
| Evenpoel *et al* | Belgium | 2015 | 5T | 268 | Male at risk | For coronary calcification, female β = -0.64, *p* < 0.0001  For thoracic aortic calcification, female β = -0.32, *p* = 0.008 | Coronary artery calcification (Agatston score) and thoracic aortic calcification | (45) |
| Qureshi *et al* | Sweden | 2015 | 5T | 89 | Male at risk of medial VC, not CAC | For epigastric artery, male RR 1.82 (1.03–1.16), *p* = 0.03  For coronary artery, male RR 0.83 (0.38-1.81), *p* = 0.63 | Biopsy-verified calcification in epigastric arteries and coronary artery calcification (Agatston score) | (21) |
| Turan *et al* | Turkey | 2016 | 5D (HD) | 224 | Male more severe | RR 4.14 (2.01–8.51), *p* < 0.001 | Coronary artery calcification (Agatston score) | (23) |
| Jankovic *et al* | Serbia | 2017 | 5D (HD) | 90 | Male at risk and more severe | For VC risk, female OR 0.134 (0.04–0.45), *p* = 0.001  For VC severity relation, female β = –0.432 (-4.41 ~ -1.86), *p* < 0.001 | Forearm AVF plain radiography | (24) (46) |
| Chen *et al* | Sweden | 2017 | 5D, 5T | 240 | Male at risk | β = 0.35, *p* = 0.008 | Coronary artery calcification (Agatston score) | (26) |
| Okamoto *et al* | Japan | 2018 | 5D (HD) | 184 | Male deteriorate rapidly | Male OR 3.29 (1.27–8.53), *p* = 0.014 | Abdominal aorta calcification on computed tomography | (28) |
| Nitta *et al* | Japan | 2018 | 5D (HD) | 216 | Female more severe | Female β = 0.221 (0.124–0.319), *p* < 0.0001 | Aortic arch calcification on chest radiography | (29) |
| Jansson *et al* | Sweden | 2019 | 3-4 | 84 | Neutral but  male more severe | Among total cohort, male not associated with AAC  Among those with AAC, male β = 0.413, *p* = 0.03 | Abdominal aortic calcification on computed tomography | (31) |
| Golembiewska *et al* | Sweden | 2020 | 5, 5D | 149 | Male at risk | Male OR 4.4 (1.6–11.1), *p* = 0.003 | Inferior epigastric artery histopathology calcification grading | (47) |

*AAC, abdominal aortic calcification; AVF, arteriovenous fistula; CKD, chronic kidney disease; HD, hemodialysis; OR, odds ratio; RR, relative risk; VC, vascular calcification*

1. Renaud H, Atik A, Herve M, Moriniere P, Hocine C, Belbrik S, et al. Evaluation of vascular calcinosis risk factors in patients on chronic hemodialysis: lack of influence of calcium carbonate. Nephron. 1988;48(1):28–32.

2. Oprisiu R, Bunea D, Tarek S, Hedi B, Fournier A. Progression of vascular calcification and dyslipidemia in patients on chronic hemodialysis [Internet]. Vol. 39, American Journal of Kidney Diseases. 2002. p. 209. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0272638614700988

3. Sigrist M, Bungay P, Taal MW, McIntyre CW. Vascular calcification and cardiovascular function in chronic kidney disease. Nephrol Dial Transplant [Internet]. 2006;21(3):707–14. Available from: http://www.ncbi.nlm.nih.gov/pubmed/16263735

4. Mazzaferro S, Pasquali M, Pugliese F, Barresi G, Carbone I, Francone M, et al. Serum levels of calcification inhibition proteins and coronary artery calcium score: Comparison between transplantation and dialysis. Am J Nephrol [Internet]. 2007;27(1):75–83. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L46364544

5. Gelev S, Spasovski G, Trajkovski Z, Damjanovski G, Amitov V, Selim G, et al. Factors associated with various arterial calcifications in haemodialysis patients. Prilozi [Internet]. 2008;29(2):185–99. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=19259046&site=ehost-live&scope=site

6. Schlieper G, Krüger T, Djuric Z, Damjanovic T, Markovic N, Schurgers LJ, et al. Vascular access calcification predicts mortality in hemodialysis patients. Kidney Int [Internet]. 2008;74(12):1582–7. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=105591391&site=ehost-live&scope=site

7. M. M, A.-M. D, I. J, H. V, G. G, K. K, et al. A cut-off value of plasma osteoprotegerin level may predict the presence of coronary artery calcifications in chronic kidney disease patients. Nephrol Dial Transplant [Internet]. 2009;24(11):3389–97. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L358385284

8. Jean G, Bresson E, Terrat J-C, Vanel T, Hurot J-M, Lorriaux C, et al. Peripheral vascular calcification in long-haemodialysis patients: associated factors and survival consequences. Nephrol Dial Transplant [Internet]. 2009;24(3):948–55. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L354216091

9. Chiu Y-W, Adler SG, Budoff MJ, Takasu J, Ashai J, Mehrotra R, et al. Coronary artery calcification and mortality in diabetic patients with proteinuria. Kidney Int [Internet]. 2010;77(12):1107–14. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=105217265&site=ehost-live&scope=site

10. Al-Rifai R, Arabi A, Masrouji R, Daouk M. Prevalence of peripheral vascular calcifications in patients on chronic hemodialysis at a tertiary care center in Beirut: A pilot study. J Med Liban [Internet]. 2011;59(3):117–21. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=22259897&site=ehost-live&scope=site

11. Chue CD, Wall NA, Crabtree NJ, Zehnder D, Moody WE, Edwards NC, et al. Aortic calcification and femoral bone density are independently associated with left ventricular mass in patients with chronic kidney disease. PLoS One [Internet]. 2012;7(6). Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L365024006

12. He J, Reilly M, Yang W, Chen J, Go AS, Lash JP, et al. Risk factors for coronary artery calcium among patients with chronic kidney disease (from the Chronic Renal Insufficiency Cohort Study). Am J Cardiol. 2012;110(12):1735–41.

13. Chang JH, Ro H, Kim S, Lee HH, Chung W, Jung JY. Study on the relationship between serum 25-hydroxyvitamin D levels and vascular calcification in hemodialysis patients with consideration of seasonal variation in vitamin D levels. Atherosclerosis. 2012;220(2):563–8.

14. Shu K-H, Tsai I-C, Ho H-C, Wu M-J, Chen C-H, Cheng C-H, et al. Coronary artery calcification in kidney transplant recipients with long-term follow-up. Transplant Proc [Internet]. 2012;44(3):687–90. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=22483469&site=ehost-live&scope=site

15. Craver L, Dusso A, Martinez-Alonso M, Sarro F, Valdivielso JMJM, Fernández E, et al. A low fractional excretion of Phosphate/Fgf23 ratio is associated with severe abdominal Aortic calcification in stage 3 and 4 kidney disease patients. BMC Nephrol [Internet]. 2013;14(1). Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L52814371

16. Claes KJ, Heye S, Bammens B, Kuypers DR, Meijers B, Naesens M, et al. Aortic calcifications and arterial stiffness as predictors of cardiovascular events in incident renal transplant recipients. Transpl Int [Internet]. 2013;26(10):973–81. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L52694576

17. Maharem DA, Gomaa SH, El Ghandor MK, Mohamed EI, Matrawy KA, Zaytoun SS, et al. Association of serum fetuin-A and fetuin-A gene polymorphism in relation to mineral and bone disorders in patients with chronic kidney disease. Egypt J Med Hum Genet [Internet]. 2013;14(4):337–52. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L369999530

18. Lee C Te, Huang CC, Hsu CY, Chiou TTY, Ng HY, Wu CH, et al. Calcification of the aortic arch predicts cardiovascular and all-cause mortality in chronic hemodialysis patients. CardioRenal Med [Internet]. 2014;4(1):34–42. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L603943439

19. Harada PHN, Canziani ME, Lima LM, Kamimura M, Rochitte CE, Lemos MM, et al. Pericardial fat is associated with coronary artery calcification in non-dialysis dependent chronic kidney disease patients. PLoS One [Internet]. 2014;9(12):e114358–e114358. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=25479288&site=ehost-live&scope=site

20. Komatsu M, Okazaki M, Tsuchiya K, Kawaguchi H, Nitta K. Aortic Arch Calcification Predicts Cardiovascular and All-Cause Mortality in Maintenance Hemodialysis Patients. Kidney Blood Press Res. 2014;39(6):658–67.

21. Qureshi AR, Olauson H, Witasp A, Haarhaus M, Brandenburg V, Wernerson A, et al. Increased circulating sclerostin levels in end-stage renal disease predict biopsy-verified vascular medial calcification and coronary artery calcification. KIDNEY Int. 2015;88(6):1356–64.

22. Jean G, Chazot C, Bresson E, Zaoui E, Cavalier E. High Serum Sclerostin Levels Are Associated with a Better Outcome in Haemodialysis Patients. Nephron. 2016;132(3):181–90.

23. Turan MN, Kircelli F, Yaprak M, Sisman AR, Gungor O, Bayraktaroglu S, et al. FGF-23 levels are associated with vascular calcification, but not with atherosclerosis, in hemodialysis patients. Int Urol Nephrol. 2016;48(4):609–17.

24. Jankovic A, Damjanovic T, Djuric Z, Marinkovic J, Schlieper G, Djuric P, et al. Calcification in arteriovenous fistula blood vessels may predict arteriovenous fistula failure: a 5-year follow-up study. Int Urol Nephrol [Internet]. 2017;49(5):881–7. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L614230135

25. Kahn J, Ram LM, Eberhard K, Groselj-Strele A, Obermayer-Pietsch B, Mueller H. Calcification score evaluation in patients listed for renal transplantation. Clin Transplant. 2017;31(3).

26. Chen Z, Qureshi AR, Parini P, Hurt-Camejo E, Ripsweden J, Brismar TB, et al. Does statins promote vascular calcification in chronic kidney disease? Eur J Clin Invest [Internet]. 2017;47(2):137–48. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L614236354

27. Disthabanchong S, Vipattawat K, Phakdeekitcharoen B, Kitiyakara C, Sumethkul V. Abdominal aorta and pelvic artery calcifications on plain radiographs may predict mortality in chronic kidney disease, hemodialysis and renal transplantation. Int Urol Nephrol [Internet]. 2018;50(2):355–64. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L619734828

28. Okamoto T, Hatakeyama S, Kodama H, Horiguchi H, Kubota Y, Kido K, et al. The relationship between poor nutritional status and progression of aortic calcification in patients on maintenance hemodialysis. BMC Nephrol. 2018;19.

29. Nitta K, Hanafusa N, Okazaki M, Komatsu M, Kawaguchi H, Tsuchiya K. Association Between Risk Factors Including Bone-Derived Biomarkers and Aortic Arch Calcification in Maintenance Hemodialysis Patients. Kidney Blood Press Res [Internet]. 2018;43(5):1554–62. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L624716127

30. K. T, A. D, Tangvoraphonkchai K, Davenport A. Reduction in Aortic Pulse Wave Velocity Is Associated with a Short-Term Reduction in Dual-Energy X-Ray Absorptiometry Lumbar Spine Bone Mineral Density T Score. Blood Purif [Internet]. 2019;1–5. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L628687376

31. Jansson H, Saeed A, Svensson MK, Finnved K, Hellström M, Guron G. Impact of Abdominal Aortic Calcification on Central Haemodynamics and Decline of Glomerular Filtration Rate in Patients with Chronic Kidney Disease Stages 3 and 4. Kidney Blood Press Res [Internet]. 2019;44(5):950–60. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L629160945

32. Hou J-S, Lin Y-L, Wang C-H, Lai Y-H, Kuo C-H, Subeq Y-M, et al. Serum osteoprotegerin is an independent marker of central arterial stiffness as assessed using carotid-femoral pulse wave velocity in hemodialysis patients: a cross sectional study. BMC Nephrol [Internet]. 2019;20(1):N.PAG-N.PAG. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=136621379&site=ehost-live&scope=site

33. Ishimura E, Okuno S, Kitatani K, Kim M, Shoji T, Nakatani T, et al. Different risk factors for peripheral vascular calcification between diabetic and non-diabetic haemodialysis patientsn - Importance of glycaemic control. Diabetologia [Internet]. 2002;45(10):1446–8. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L35244899

34. Raggi P, Boulay A, Chasan-Taber S, Amin N, Dillon M, Burke SK, et al. Cardiac calcification in adult hemodialysis patients: A link between end-stage renal disease and cardiovascular disease? J Am Coll Cardiol [Internet]. 2002;39(4):695–701. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L34158168

35. Nishizawa Y, Jono S, Ishimura E, Shioi A. Hyperphosphatemia and vascular calcification in end-stage renal disease. J Ren Nutr [Internet]. 2005;15(1):178–82. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L40093705

36. Jung HH, Kim S-W, Han H. Inflammation, mineral metabolism and progressive coronary artery calcification in patients on haemodialysis. Nephrol Dial Transplant. 2006;21(7):1915–20.

37. Sigrist MK, Taal MW, Bungay P, McIntyre CW. Progressive vascular calcification over 2 years is associated with arterial stiffening and increased mortality in patients with stages 4 and 5 chronic kidney disease. Clin J Am Soc Nephrol. 2007;2(6):1241–8.

38. Bellasi A, Veledar E, Ferramosca E, Ratti C, Block G, Raggi P, et al. Markers of vascular disease do not differ in black and white hemodialysis patients despite a different risk profile. Atherosclerosis [Internet]. 2008;197(1):242–9. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L351273245

39. Schlieper G, Brandenburg V, Djuric Z, Damjanovic T, Markovic N, Schurgers L, et al. Risk factors for cardiovascular calcifications in non-diabetic Caucasian haemodialysis patients. Kidney Blood Press Res [Internet]. 2009;32(3):161–8. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L50530012

40. Sumida Y, Nakayama M, Nagata M, Nakashita S, Suehiro T, Kaizu Y, et al. Carotid artery calcification and atherosclerosis at the initiation of hemodialysis in patients with end-stage renal disease. Clin Nephrol [Internet]. 2010;73(5):360–9. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L358729373

41. Manghat P, Souleimanova I, Cheung J, Wierzbicki AS, Harrington DJ, Shearer MJ, et al. Association of bone turnover markers and arterial stiffness in pre-dialysis chronic kidney disease (CKD). Bone [Internet]. 2011 May 1;48(5):1127–32. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=21281749&site=ehost-live&scope=site

42. Tamei N, Ogawa T, Ishida H, Ando Y, Nitta K. Serum Fibroblast Growth Factor-23 Levels and Progression of Aortic Arch Calcification in Non-Diabetic Patients on Chronic Hemodialysis. J Atheroscler Thromb. 2011;18(3):217–23.

43. Pateinakis P, Papagianni A, Douma S, Efstratiadis G, Memmos D. Associations of fetuin-A and osteoprotegerin with arterial stiffness and early atherosclerosis in chronic hemodialysis patients. BMC Nephrol. 2013;14.

44. Vipattawat K, Kitiyakara C, Phakdeekitcharoen B, Kantachuvesiri S, Sumethkul V, Jirasiritham S, et al. Vascular calcification in long-term kidney transplantation. Nephrology [Internet]. 2014;19(4):251–6. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L372702733

45. Evenepoel P, Goffin E, Meijers B, Kanaan N, Bammens B, Coche E, et al. Sclerostin serum levels and vascular calcification progression in prevalent renal transplant recipients. J Clin Endocrinol Metab [Internet]. 2015;100(12):4669–76. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=113977572&site=ehost-live&scope=site

46. Jankovic A, Damjanovic T, Djuric Z, Marinkovic J, Schlieper G, Tosic-Dragovic J, et al. Impact of Vascular Calcifications on Arteriovenous Fistula Survival in Hemodialysis Patients: A Five-Year Follow-Up. Nephron. 2015;129(4):247–52.

47. Golembiewska E, Qureshi AR, Dai L, Lindholm B, Heimbürger O, Söderberg M, et al. Copeptin is independently associated with vascular calcification in chronic kidney disease stage 5. BMC Nephrol [Internet]. 2020 Feb 7;21(1):43. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=32033584&site=ehost-live&scope=site