CO 01

A Delphi consensus study on living with carotid artery disease – patient reported outcome measures

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INTRODUCTION: Currently, evidence is lacking for disease-specific patient reported outcome measure (PROM) for use in carotid artery disease. This study aimed to obtain expert consensus on the most important items to include in a PROM designed to capture the impact of carotid artery stenosis on overall health and health-related quality-of-life (HRQOL).

METHODS: A three round modified Delphi consensus study was performed. A mixed expert Delphi panel of doctors and patients (as patients are experts in their own disease) was implemented. The aim was to obtain pre-defined consensus on items in four pre-defined domains: generic, quality-of-life, symptom-related and treatment-related. Consensus was reached in rounds 2 and 3 with >70% agreement.

RESULTS: The experts agreed on 24 items (out of 50) on the four pre-defined domains. The final items were distributed as follows: five in the Generic, six in the Quality-of-life, six in the Symptom and seven in the Treatment-related domain.
Interestingly, comparing the items that reached consensus in our study, with the generic and disease-specific PROMs previously used in carotid artery disease investigation, the only constant items were: “difficulty with walking” and “ability to perform daily activities” included in the “Symptom Domain”.

The items that reached expert consensus in this study included three additional domains with emphasis given to the impact of the diagnosis, treatment and follow-up on patient´s life and to fear/concern "about the future and “about severe stroke”. In the “Treatment Domain” emphasis was also attained on the side-effects, long-term patient satisfaction and on the information provided regarding treatment options.

DISCUSSION: As hard clinical outcomes become increasingly rare, comparison between different approaches to carotid artery disease becomes increasingly difficult. The consensus reached provides insight into patient and clinical expert opinion regarding the most important items to include in a holistic disease-specific PROM for carotid artery disease.

CO 02

Effect of smoking cessation on abdominal aortic aneurysm growth: a systematic review and meta-analysis

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OBJECTIVE: Smoking is the single most important factor associated with the development of abdominal aortic aneurysms (AAA), however the effect of smoking cessation on AAA growth in poorly understood. We aimed to conduct a systematic review and meta-analysis of the effect of smoking cessation in abdominal aortic aneurysm growth compared to active smokers and non-smokers.

METHODS: A systematic review was performed following the PRISMA guidelines. We searched MEDLINE, CENTRAL, PsycInfo, Web of Science Core Collection and OpenGrey databases from inception to December 2021 for studies reporting on aneurysm growth according to smoking habits. AAA was defined as an infra-renal aortic diameter >3cm. The main outcome was to estimate the mean difference of abdominal aortic aneurysms growth between smokers, former smokers, and nonsmokers. The estimates were pooled through a random-effects model meta-analysis and heterogeneity assessed through the I2 statistic. The protocol was published in PROSPERO (CRD 42021295315)

CONCLUSION: After 567 abstracts reviewed and 17 full text studies, 6 studies were included in the review and meta-analysis. Studies reported data from 1987-2017, encompassing a population of 2960 people with diagnosis of AAA, which 972 were active smokers, 1254 were former smokers and 679 were nonsmokers. The pooled calculated mean difference of AAA growth was -0.41mm/year for former smokers compared to active smokers (95% CI: -0.62; -0.20; p<0.001; I^2:13%). The pooled calculated mean difference of AAA growth was -0.52 for nonsmokers compared to active smokers (95%CI: -0.95; -0.08; p=0.02; I^2:63%). The pooled calculated mean difference of AAA growth was -0.07 for nonsmokers compared to former smokers (95%CI: -0.59; 0.45; p=0.10; I^2:56%).

CONCLUSION: Smoking cessation seems to reduce the growth rate of AAA to rates similar to non-smokers, being a potential therapeutic target. These findings should lead to a higher awareness of the importance of smoking eviction in AAA patients and to future studies on this matter.

CO 03

The experience of a tertiary center in the total endovascular aortic arch repair with a double-branch platform

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INTRODUCTION: Endovascular repair of aortic arch pathology has reduced the invasiveness associated with open surgery and therefore broadened the spectrum of patients amenable to treatment. The aim of this study is to assess the early and mid-term results of the endovascular aortic arch repair using a double inner branch endovascular stentgraft.

METHODS: A prospective cohort study including all patients treated for aortic arch pathology with endovascular repair using a double-branch stentgraft was conducted between January 2019 and April 2022. The technical success, mortality, major complications and need for reintervention are reported.

RESULTS: During the study period, 9 patients were treated with the Relay® double-branch system (Terumo Aortic, Sunrise, FL, USA) for degenerative aneurysms (n=6), post-dissection aneurysms or endoleaks (n=2) and syphilitic aneurysm (n=1). All patients underwent staged Ishimaru zone 2 arch debranching. A Proctor was present in 7 cases. The technical success was 88.9% (n=8) as one patient required open conversion due to an intraoperative retrograde dissection. No early type IA/IB endoleaks were recorded. There were no disabling strokes nor spinal cord ischemia during the post-operative period; however, a non-disabling transient ischemic attack occurred in one patient (11.1%). The aortic-related mortality was 11.1% (1 patient with an intra-operative retrograde dissection that died 38 days after emergency open repair). Two additional patients died due to non-vascular related causes (septic shock due to respiratory infection and ventilator-associated pneumonia). During the mid-term follow-up period (median follow-up 35 months, IQR 13.75 – 38.5) one patient was diagnosed with a type A aortic dissection, refused repair (Jehovah Witness) and died in other hospital. No late re-interventions were needed and the follow-up imaging showed adequate exclusion of the aneurysms and stability of the stentgrafts.

CONCLUSION: The results of this cohort support endovascular arch repair as a viable alternative for high-risk patients. However, despite an acceptable aortic-related mortality, the overall mortality in this short initial experience was high, raising the importance of an adequate patient selection.

CO 04

Octopus endograft technique in complex aortic pathologies – retrospective single-center review

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INTRODUCTION: Customized endografts, namely f/bEVAR, present favorable outcomes compared to open repair in complex aortic pathologies. However, f/bEVAR carries a waiting time for customization and requires specific anatomic features. Alternatively, adapting off-the-shelf readily available commercial devices has been used with variable success. Among these strategies is the Octopus technique, where a standard bifurcated EVAR is deployed in the thoracic aorta and up to four bridging stentgrafts are used to revascularize visceral branches. Despite an off-label combination of commercial devices, it can play a role when f/bEVAR is unavailable or inapplicable.

METHODS: Single center retrospective study. All consecutive patients treated with the Octopus technique since 2015 until March 2022 were included. Patients were identified through institutional files. Baseline characteristics, aortic pathology, procedural, post-operative and follow-up data were obtained. Primary endpoint is clinical success. Secondary endpoints are complications and secondary interventions in all follow-up.

RESULTS: Between May 2015 and February 2022, six patients, 50% male, with a mean(SD) age of 74(9) were identified. Most common comorbidities were hypertension(5/6) hyperlipidemia(5/6) and cardiac disease(4/6). Indications included three type 1 endoleaks and 3 thoracoabdominal aneurysms without prior intervention, one of which mycotic. (Table 1) Mean(SD) aortic diameter was 62(6.7)mm. Four procedures were elective and the remaining emergent. Other than emergent setting, this technique was chosen in 3 patients due to anatomical constraints and in other due to limited life expectancy. All procedures went under general anesthesia. CSF drain was used in 1 procedure. Excluder and Incraft endografts were used in 5 and 1 cases, respectively. Thirteen visceral branches were revascularized with Viabahns (6 SMA, 4 renal and 3 celiac), with no failed branch implantation attempts. Branches not revascularized were due to occlusion, previous embolization or because distal sealing was proximal to their origin. Final angiography showed gutter endoleaks in 2 patients, without further intraoperative procedures. Two percutaneous axillary access hemorrhage were noted and treated with stentgrafts. Mean(SD) blood loss, surgery time and contrast use was 483(300)mL, 288(73)min and 120(57)mL, respectively. Mean(SD) hospitalization was 26(19.5) days. Most frequent postoperative complications were acute renal failure(2/6), paraplegia(2/6), and infection(2/6).(Table 2) Two patients had early reinterventions: one relining with bare stent due to renal branch compression and gutter coil embolization; and one axillary hematoma drainage. One perioperative death occurred. On follow-up, there were no new endoleaks or endoleak-related interventions. Four patients died within two years, one with aneurysm related complication(endograft infection). Other deaths were not aneurysm related.

CONCLUSION: Octopus technique offers a valuable off-the-shelf solution for patients with complex aortic pathologies, particularly in anatomical constraints or emergent setting limiting the use of customized grafts. Despite a high technical success rate, there is a learning curve to consider and significant early morbidity and high mid-term mortality in a frail group of patients. In our small series, durability was reasonable with no need for secondary interventions. Our outcomes are in accordance with other reported outcomes.

	Total
Urgent, n(%)	2 (33%)
Elective, n(%)	4 (67%)
Previous endovascular aortic intervention, n(%)	3 (50%)
-TEVAR + coil embolization celiac artery	1(17%)
-AUI EVAR + femoral crossover + proximal aortic extension cuff	1(17%)
-EVAR + IBD + limb extension + proximal Palmaz stent	1(17%)
Pathology	
- Ruptured mycotic aneurysm	1 (17%)
- rEVAR due to type 1a endoleak	1 (17%)
-Type 1a EL post-EVAR	1 (17%)
-Type 1b EL post-TEVAR	1 (17%)
-Type 4 TAAA	1 (17%)
-Type 5 TAAA	1 (17%)

30-day outcomes	
ICU stay, days, mean (SD)	6 (2.7)
Hospitalization, days, mean (SD)	26(19.5)
Renal, n(%)	2 (33%)
Infection, n(%)	2 (33%)
Pulmonary, n(%)	1 (17%)
Cardiac, n(%)	-
Paraplegia, n(%)	2 (33%)
Other neurologic, n(%)	1 (17%)
Pot-implantation Syndrome, n(%)	1 (17%)
Branch compression, n(%)	1 (17%)
Branch thrombosis, n(%)	-
Reintervention, n(%)	2 (33%)
Mortality, n(%)	1 (17%)

CO 05

A systematic review and meta-analysis of the incidence of acute aortic dissections in population-based studies. Retrospective single-center review

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OBJECTIVE: Acute aortic dissections (AAD) are considered one of the most serious aortic diseases with a significant associated morbidity and mortality. Epidemiologic data regarding these serious conditions is widely dispersed.5,7,8 Described incidence rates vary between studies and population-based information regarding clinical data such as need of repair, risk factors and mortality is scarcely reported. This expresses the need for a pooled estimate of incidence of AAD and an overall analysis on their outcomes. We sought out to fill this gap in the literature by performing a systematic-review and meta-analysis of all population-based studies reporting on incidence of acute aortic dissections worldwide.

METHODS: We searched MEDLINE, EMBASE, CENTRAL and Open Grey databases from inception to August 2020 for population-based studies reporting on the incidence of AAD. A systematic review was conducted following the PRISMA guidelines using a registered protocol (CRD42020204007). Data was pooled using a random-effects model of proportions using Freeman-Tukey double arcsine transformation. The main outcome was the incidence of AAD. Secondary outcomes were incidence type A aortic dissections (TAAD) and type B aortic dissections (TBAD); incidence of aortic dissection repair and medical management and incidence of in-hospital mortality. In addition, we estimated the proportion of aortic dissection repair and mortality (in hospital, overall and specific mortality according to sub-type) among patients with AAD.

RESULTS: Thirty-three studies were included. The pooled incidence of AADs was 4.8 per 100 000 individuals/year (95%CI: 3.6; 6.1). Incidence of TAAD was 3.0 per 100 000/year (95%CI: 1.8; 4.4) and incidence of TBAD was 1.6 per 100 000/year (95%CI: 1.1; 2.2). The incidence of AAD needing repair was 1.4 per 100 000/year (95%CI: 1.0; 2.0) [1.4 (95%CI: 1.2; 1.7) for TAAD and 0.4 (95%CI: 0.2; 0.7) for TBAD]. Incidence of medically managed AAD was 3.4 per 100 000/year (95%CI: 2.4; 4.5). Incidence of in-hospital death due to AAD was 1.3 per 100 000 individuals/year (95%CI: 0.9; 1.9); 1.0 (95%CI: 0.6; 1.4; I297%) for TAAD and 0.3 for TBAD (95%CI: 0.2; 0.4; I296%).

CONCLUSION: A global estimate regarding the incidence rate of acute aortic dissections was achieved. Incidence of acute aortic dissection varied significantly between study designs and geographical regions. More accurate information on acute aortic dissection epidemiology is crucial for public-health decisions, clinical understanding, and healthcare management.

CO 06

Blunt traumatic injuries of thoracic aorta and supra-aortic trunks, a portuguese single centre's experience

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INTRODUCTION: Despite advances in surgical techniques, ruptured aortic aneurysm is still associated with extremely high mortality. The presence of preoperative factors related to shock have been associated with 30-day mortality after ruptured abdominal aortic aneurysm surgery. This study aimed to identify pre-operative risk factors for 48-hour and 30-day mortality after both abdominal and thoracic aorta aneurysm rupture.

METHODS: All patients with ruptured descendent thoracic and abdominal aorta aneurysms who entered the operating room for surgical repair attempt from a 30-month period in our institution were retrospectively identified. Demographic data, comorbidities including chronic anticoagulation, 48-hour and 30-day mortality rate and complications, data concerning to aneurysm diameter, transfer from other institution and time to operating room, surgery duration, endovascular/open surgery, massive transfusion, minimum pre-operative systolic arterial pressure and pre-operative analysis including haemoglobin, platelets, leukocytes, neutrophil-to-lymphocyte ratio (NLR), creatinine, albumin, C-reactive protein and lactates were collected.

Fisher and Mann-Whitney U tests were used to evaluate difference between results in thoracic and abdominal aneurysms. Logistic regression was used to evaluate significant factors for 48-hour and 30-day mortality. ROC curves were used to predict cut-off values in the relevant parametric data. A P-value of <0.05 was considered as statistical significance.

RESULTS: During this period 53 patients with aortic rupture entered the operating room, in 4 of them surgery was not completed. Only 15.1% were descendent thoracic aortic ruptures. 84.9% were male and average age was 77.4±8.6 years. There was a 37.7% 48-hour mortality and a 50.9% 30-day mortality rate. The only significant difference between thoracic and abdominal rupture was surgery duration (p=0.03, inferior in thoracic aorta surgery). No difference in mortality rate was noted (p=0.31).

Lowest pre-operative minimum systolic arterial pressure and increased NLR were the most significant pre-operative factors related to 48-hour mortality (p=0.01 and p=0.04, respectively). An optimal Youden Index was identified as a pre-operative minimum systolic pressure of <81mmHg with 85.0% sensitivity and 66.6% specificity and a NRL>8.58 with 76.9% sensitivity and 64.0% specificity for 48-hour death. A value <52mmHg minimum systolic pressure had 15.0% sensitivity and 93.9% specificity and NRL>15.0 had 53.8% sensitivity and 92.0% specificity for early per-operative mortality. Endovascular repair was identified as a protective factor for 30-day mortality (35.3% in endovascular versus 70.6% in open repair, OR=0.31, p=0.02) but not for 48h death (p=0.77). Low albumin was the most significant factor associated with 30-day mortality (p=0.02), with an optimal Youden Index <2.25 allied to a 52.9% sensitivity and 90.0% specificity and a cut-off <1.5 to a 23.5% sensitivity and 95.0% specificity for 30-day mortality.

CONCLUSION: The identified risk factors are easily assessed in the emergency setting and may provide additional information to the development of a more precise preoperative mortality scoring system. This information may contribute to improve identification of patients with ruptured aortic aneurysm suitable for attempted repair.

CO 07

Preoperative predictors of 48-hour and 30-day mortality in ruptured aortic aneurysms: a retrospective analysis

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INTRODUÇÃO: A disseção aórtica tipo B (DAB) é uma síndrome aórtica aguda que apresenta elevada taxa de mortalidade. Atualmente, na fase aguda, preconiza-se o tratamento médico nos casos de DAB não complicada, ficando a cirurgia reservada para os casos de DAB complicada (rutura, síndrome de má perfusão, dor/hipertensão refratária, expansão rápida ou progressão proximal/distal).

CASO CLÍNICO: Apresentamos o caso de uma mulher de 70 anos, com antecedentes de hipertensão e dislipidémia que recorreu ao serviço de urgência em Novembro de 2021 por quadro de dor abdominal e hematemese. À admissão, apresentava hipotensão, taquicardia e dor à palpação abdominal. A endoscopia digestiva alta não identificou hemorragia ativa nem lesões estruturais. A angio-TC mostrou DAB com origem após a emergência da artéria subclávia esquerda, com extensão até à ilíaca primitiva esquerda. As artérias viscerais, com exceção da artéria renal direita, emergiam do verdadeiro lúmen (VL), que se encontrava colapsado a este nível; a artéria renal direita, apesar de emergir do falso lúmen (FL), mantinha-se permeável. Destacava-se ainda dilatação aneurismática (6 cm) da aorta torácica descendente proximal e volumoso hemotórax esquerdo.

RESULTADOS: Por se tratar de um caso de DAB complicada de falso aneurisma/rotura e de má perfusão visceral, no contexto de colapso do VL, a doente foi submetida a cirurgia urgente: implantação de endoprótese torácica (TEVAR) na aorta torácica descendente, de stent descoberto na aorta toracoabdominal (PETTICOAT) e angioplastia com implantação de stent coberto nas artérias renal direita, ilíacas primitivas ("kissing stent") e ilíaca externa direita. No final da cirurgia foi colocado dreno torácico, com saída imediata de 600cc de conteúdo hemático.

O pós-operatório, na unidade de cuidados intensivos, foi complicado de AVC isquémico do hemisfério direito (plegia do membro superior esquerdo e paresia do membro inferior esquerdo, sem tradução imagiológica), detetado às 48h de pós-operatório, após extubação. Durante o internamento recuperou francamente dos défices motores, tendo alta ao 21º dia pós operatório, após resolução social, sem mais intercorrências.

A angio-TC de controlo aos 2 meses mostrou expansão do verdadeiro lúmen com adequada perfusão das artérias viscerais, exclusão do falso lúmen exceto em zonas focais de realce extraluminal em relação com endoleak tipo II, à custa das artérias intercostais, mantendo derrame pleural residual.

CONCLUSÃO: A DAB complicada tem elevada taxa de mortalidade estando recomendado o tratamento cirúrgico. A cirurgia endovascular apresenta taxas de morbi-mortalidade francamente inferiores à cirurgia aberta, estando recomendada quando possível.

CO 08

Cardiovascular outcomes after renal angioplasty: what changed after the coral trial?

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INTRODUCTION: As a form of peripheral artery disease, renal artery stenosis carries a significant burden in vascular patients. Its incidence ranges from 1 to 5% in recent epidemiological series. Apart from medical therapy, renal angioplasty was proposed as an approach for renovascular hypertension and acute renal failure due to renal artery stenosis. Nevertheless, the landmark clinical trials ASTRAL and CORAL did not show a clear clinical benefit when performing this technique. This study aims to evaluate cardiovascular outcomes after renal angioplasties performed before and after the publication of these trials in a university center.

METHODS: We designed a longitudinal cohort study from patients submitted to isolated renal angioplasty between 1999 and 2021 in a tertiary center. Patients were selected from electronical surgical records using the following ICD-10 codes: “renovascular hypertension”, “atherosclerosis of renal artery” or “hypertensive chronic kidney disease.” Renal arteriograms were excluded from the analysis. Patients were divided into two cohorts: 1999-2013 (before CORAL) and 2014-2021 (after CORAL). The total number of procedures, demographic data, cardiovascular comorbidities, and baseline kidney function and lesions were assessed. Patients were followed up for a minimum period of 12 months. Changes in creatinine, glomerular filtration rate, and hypertensive control were evaluated during follow-up.

RESULTS: 180 renal angioplasties were performed in 147 patients during the study period. The median follow-up period was 37.5 months IQR (17.5-81). There was a 60% decline in the number of procedures after 2014 (105 vs. 42 procedures). A total of 33 patients (22.45%) were subjected to bilateral renal angioplasty. Patients in the pre-CORAL cohort were non-significantly older (67.6 ± 13.1 vs 63.9 ± 10.9; p .11) and predominantly male (75% vs 71.4%; p .69). The median number of preoperative antihypertensive drugs was significantly higher in patients subjected to renal angioplasty before 2014 (2.7 vs. 1.9; p < .001). Mean serum creatinine levels were significantly higher in patients submitted to angioplasty before 2014 (1.60 mg/dL vs 1.13 mg/dl; p .003). Renal stenoses were significantly more severe in patients submitted to angioplasty in the early cohort (85.1% vs. 80.4%; p . 04). Most lesions were at the renal artery origin (45.9%), followed by proximal lesions (36.4%).

6 to 12 months after the procedure, over 47% of all patients managed to withdraw one or more antihypertensive drugs, with no statistical difference between both cohorts (47.8% vs. 47.6%; p .986). Patients undergoing interventions before 2014 had a mean 20% reduction in creatinine levels, while patients after 2014 had a 15% increase in postoperative creatinine levels (p .005).

CONCLUSION: Following the publication of the ASTRAL and CORAL trials, there was an overall decrease in the number of renal angioplasties and the severity of the treated lesions. Despite similar comorbidities, patients subjected to renal angioplasty after the landmark clinical trials had significantly lower preoperative creatinine levels and were taking less antihypertensive drugs preoperatively. Nevertheless, renal angioplasty seemed to offer some clinical benefit regarding hypertensive control, although with different results regarding renal function.

CO 09

Cognitive and balance evaluation after carotid endarterectomy in asymptomatic patients: a prospetive study

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INTRODUCTION: Recent studies proved impaired mobility, balance and cognition in patients with significant asymptomatic carotid stenosis (ACAS) in comparison to general community adult population, with higher limitations in patients with severe stenosis. In our study, we tested the hypothesis that patients with severe ACAS (unilateral or bilateral ≥70% diameter-reducing stenosis) will have cognitive and balance improvement after carotid revascularization.

METHODS: All asymptomatic patients who underwent carotid endarterectomy between 2020 and 2021 in our institution were enrolled in the study. Patients with past history of stroke/amaurosis fugax more than 6 months ago with complete clinical recovery were included. Cognitive, mobility and balance tests were performed the week before surgery and were randomized to post-operative re-evaluation at 6-8 months or 12-14 months. Executed tests were Mini-Mental State Exam (MMSE), Timed Up and Go test (TUG), 2 Minute Walk Test (2MWT), Berg Balance Scale (BBS) and Activities-specific Balance Confidence (ABC) Scale. Cognitive defect was considered if MMSE≤22 if ≤2 years education and MMSE≤24 if 3-6 years education. A TUG score of ≥13.5 seconds was used to identify individuals at higher risk of falling. 2MWT was used to calculate gait speed and classified as risk of frailty if <0.8m/s. Impaired balance was diagnosed using 14-item BBS if score <45 or ABC scale <80%. Student's t tests were used to evaluate difference between baseline and post-operative results and McNemar's test to compare frequency of patients with pre-operative and post-operative impairment in each test. Pearson's correlation was used to examine relationship between cognitive and balance change after surgery. A P-value of <.05 was considered as statistical significance.

RESULTS: 18 patients were recruited. The mean age was 70.1±7.3 years. 72.2% were man. 44.4% had severe unilateral stenosis and the remaining had bilateral stenosis. One patient was lost in follow-up. Patients showed reduced scores at baseline, ranging from 11.1% to 38.9% depending on the evaluated test. Also, 44.4% of the patients had MMSE<28 at baseline. Statistical difference was noted between pre and post-operative changes in the majority of the tests (p<.05, except for TUG). Greatest significant improvement was noted in BBS score (38.9% impaired baseline results versus 5.9% after surgery, p=.004) and MMSE score (11.1% cognitive deficit before surgery versus 0% after revascularization, p<.001). After surgery significant improvement in absolute score was noted in overall and impaired patients using balance scale BBS (p=.001) and for patients with baseline cognitive deficit using MMSE (p=.04). Patients with lower balance and cognitive scores had higher improvement after revascularization (r=0.82 for BBS and r=0.87 for MMSE, p<.001). Time of post-operative evaluation did not influence tests scores.

CONCLUSION: Carotid endarterectomy improved balance and cognitive scores in asymptomatic patients with severe unilateral or bilateral stenosis. Greatest improvements were noted in patients with most impaired scores at baseline.

CO 10

Impact of charlson comorbidity index adjusted to age in prognosis after endovascular abdominal aortic aneurysm repair

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BACKGROUND: Baseline comorbidity adjustment is an important component of health services research and clinical prognosis and can be obtained considering comorbidities individually or through the use of summary measures such as Charlson Comorbidity Index adjusted to age (CCIa), the most widely validated and used comorbidity assessment tool in research. There are many studies proving its value as predictor of mortality for a variety of conditions including cancer, stroke, acute mesenteric ischemia, coronary artery bypass grafting and COVID-19 patients; however, its prognosis value in patients submitted to elective endovascular abdominal aortic aneurysm repair (EVAR) has not been studied.

METHODS: Asymptomatic patients submitted to EVAR implantation between January 1, 2017 and December 31, 2021 in our Vascular Surgery Department were retrospectively evaluated. After exclusion criteria were applied, 123 patients were included. Patient characteristics, pre- and post-operative period variables were collected and CCIa calculated. Surgical complications were classified according to Clavien-Dindo. The area under the curve (AUC) of the receiver operating characteristic curves (ROC) was calculated to validate and determine the discriminating ability of CCIa in predicting complications and mortality. Youden index was used to determine the critical value. A p value of <0.05 was considered statistically significant.

RESULTS: The mean age was 73,49±7.95 years and the mean follow-up 30,55±16,49 months. 30-day complication rate was 16%, 30-day mortality 1,63% and overall mortality 16%. Patients with higher CCIa had higher overall mortality (p=.002, AUC 0.718 (95% CI 0.576-0.861)) but CCIa had no impact on 30-day complications (p=.740) and 30-day mortality (p=.0889). Logistic regression showed that even after adjusting for patients' comorbidities individually, CCIa was the only independent mortality predictor (p=.003). The optimal cutoff associated with higher overall mortality was found to be 5.5. Conclusions: CCIa does not seem to be a good predictor of complications and early mortality after elective EVAR, however it seems to be a good predictor of overall mortality. These results show the limited role of this score in predicting the outcomes after surgery of these patients but may help to identify a sub-population whose shorter life-expectancy should be considered towards the benefits of elective EVAR.

CO 11

Incidence of acute aortic dissections in patients with out of hospital cardiac arrest: a systematic review and meta-analysis of observational studies

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INTRODUÇÃO: Acute Aortic dissection (AAD) may present as out-of-hospital cardiac arrest (OHCA). However, the incidence of this presentation is not well known. Our aim was to perform a systematic review and meta-analysis of all observational studies reporting on the incidence of AAD in patients with OHCA.

METHODS: We searched MEDLINE, CENTRAL, PsycInfo, Web of Science Core Collection and OpenGrey databases from inception to March-2021, for observational studies reporting on the incidence of AAD in patients with OHCA. Data was pooled using a random-effects model of proportions. The primary outcome was the incidence of AAD in OHCA patients. Secondary outcomes were the incidence of type A aortic dissections (TAAD) and type B aortic dissections (TBAD) in OHCA patients, overall mortality following AAD-OHCA and risk of death in AAD-OHCA patients compared to risk of death of non-AAD-OHCA patients.

RESULTS: Fourteen studies were included. The pooled calculated incidence of OHCA due to AAD was 4.39% (95%CI: 2.55; 6.8). Incidence of OHCA due to TAAD was 7.18% (95%CI: 5.61; 8.93) and incidence of OHCA due to TBAD was 0.47% (95%CI: 0.18; 0.85). Overall mortality following OHCA due to AAD was 100% (95%CI: 97.62; 100). The risk of death in AAD-OHCA patients compared with non-AAD-OHCA patients was 1.10 (95%CI: 0.94; 1.30).

CONCLUSION: AAD as a cause of OHCA is more frequent than previously thought. Prognosis is dire, as it is invariably lethal. These findings should lead to a higher awareness of AAD when approaching a patient with OHCA and to future studies on this matter.

CO 12

Time goals na rotura de aneurisma da aorta abdominal – experiencia de um centro de referenciação

João Pedro Rato, Pedro Amorim, Alice Cabral Lopes, Ryan Gouveia e Melo, Mariana Moutinho, Luís Mendes Pedro

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INTRODUÇÃO: A elevada morbimortalidade associada à rotura de aneurisma da aorta exige que o tratamento desta patologia seja feito de forma o mais célere possível – esta é uma norma amplamente aceite na literatura atual, existindo inclusive recomendações internacionais nesse sentido.
Este trabalho tem como objetivo principal avaliar a influência do tempo decorrido entre o diagnóstico e a instituição de tratamento bem como a sua eventual relação com a taxa de mortalidade.

MATERIAL E MÉTODOS: Foi realizado um estudo observacional, tipo coorte, unicêntrico, no qual foram incluídos todos os doentes com o diagnóstico de aneurisma da aorta abdominal justa ou infra-renal em rotura ou sintomáticos, referenciados ao nosso centro entre 2012 e 2021.

RESULTADOS: Durante o período do estudo foram tratados 150 doentes (90.7% homens; idade média 78.3 anos, dp 8.7). A apresentação clínica foi de rotura em 86% dos casos, correspondendo os restantes 14% a aneurismas sintomáticos. O tempo médio entre a realização de exame de imagem (estabelecimento de diagnóstico) e a entrada do doente no bloco operatório (instituição de tratamento) foi de 150 +/- 198 minutos. Em apenas 22% da totalidade dos casos foram cumpridas as recomendações internacionais - tempo abaixo dos 90 minutos; a distribuição temporal dessa percentagem de doentes manteve-se inalterada ao longo do período de tempo analisado.

Não se observou uma diferença estatisticamente significativa nos tempos apresentados entre sobreviventes e óbitos às 24 horas (p = 0.907, 95%IC), 48 horas (p = 0.743, 95%IC) ou aos 30 dias após (p = 0.650, 95%IC).

A idade do doente foi o único fator preditor de mortalidade a 48 horas e a 30 dias (não a 24 horas), ajustado para género e para o tempo entre diagnóstico e instituição de tratamento.

CONCLUSÃO: Apenas 22% dos doentes com aneurismas da aorta em rotura/sintomáticos são tratados dentro dos tempos recomendados. Apesar da ausência de impacto estatístico sobre a mortalidade no coorte apresentado, a distribuição uniforme ao longo dos anos dos doentes que cumprem o critério dos 90 minutos até ao início do tratamento deve funcionar como um alerta para a comunidade vascular não só pela baixa taxa registada como pela ausência de evolução ao longo do tempo.

CO 13

Internal carotid artery trauma due to elongated styloid process – a case study

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CHUC

INTRODUCTION: Eagle syndrome was first described by W. Eagle who estimated the length of a normal styloid process at 2.5–3.0 cm. Two groups have been defined: classic form, typically seen in patients after pharyngeal surgery. Ipsilateral cervical pain, dysphagia, tinnitus or otalgia are possible symptoms due to cranial nerves anatomical proximity; the vascular form is caused by the conflict with the vascular structures leading to carotid artery dissection (CAD) or compression, thus, possible neurological events. Being headache the most common initial symptom in patients with spontaneous CAD, eagle syndrome could be one explanation for some so-called spontaneous dissections.

METHODS: extensive electronic search of the literature using PubMed and Embase databases. The combination of keywords used in our search strategy was the following: (Eagle syndrome OR stylocarotid syndrome) AND (carotid artery dissection OR compression OR stenosis). We ended up with 8 cases related to carotid artery compression and 32 cases of CAD from 33 articles.

RESULTS: We divided the sample into two groups: the compression group and the CAD group. The first group consisted of 1 female and 7 male patients, with a mean age of 55.8 years. All cases presented with transient neurological events triggered by cervical rotation. Six out of eight cases had clinical symptoms for over one year and only two patients presented with symptoms for a month. All patients were treated with resection of the styloid process on the symptomatic side, except for one with bilateral involvement, who had a preventive resection. No patient had symptoms relapse after surgical management. The CAD group showed that 71.9% were generally fit and the mean age was 47.5 years old. The condition was more common in men with a ratio of 2.2:1. Four patients had no focal neurological deficits and presented with sudden headache, being this symptom present in one-third of the patients. In terms of initial management, 22 patients were managed with medical therapy only; 5 underwent endovascular and/or intra-arterial fibrinolysis and 5 patients were managed with angioplasty and stent placement. Acute recurrence symptoms were observed in 34% of patients, 9 were initially treated with medical therapy leading to balloon angioplasty and stent placement in 4. After initial management 17 patients were selected for styloidectomy. Three cases reported recurrence symptoms during follow-up.

CONCLUSION: On one hand, in the compression group, patients present with reproducible symptoms with cervical rotation. Neurological sequelae are not common since these events are most transient. After establishing the relationship between the carotid artery and the styloid process, the treatment with surgical resection seems logical and very effective. On the other hand, in CAD group, the clinical presentation is usually sudden. In our case study, there was no significant difference between the anti aggregating and anticoagulation therapy in terms of symptoms recurrence but since more than one-third of the patients experienced symptoms despite medical treatment, we can assume the recurrence rate is quite high. The presence of deteriorating clinical neurologic symptoms despite medical treatment in this subgroup of CAD makes stenting one treatment of choice. Whether delayed styloidectomy after medical management plays a role in CAD, as it does for the compression group, is something to investigate.

CO 14

Doxycycline is not effective in reducing abdominal aortic aneurysm growth: a systematic review and meta-analysis of randomized controlled trials

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INTRODUCTION: Abdominal aortic aneurysms (AAA) are an entity that, although widely studied and with significant progress in surgical repair, still has no effective pharmacological therapy. Surgical options are offered for definitive treatment but many patients are diagnosed with “small aneurysms” (i.e. below surgical treatment threshold). For these patients, reducing aneurysmal growth rate seems to be ideal. To date, no drug has been found to meet these criteria. One option would be to target the inflammatory pathway mediated by metalloproteinases and doxycycline has been shown to reduce the level of these enzymes in both animal models and humans and it’s effect on aneurysm growth has seemed significant in the first. We sought out to perform a systematic review and meta-analysis of randomized controlled trials analyzing the effect of doxycycline compared to placebo in the reduction of aneurysm growth (PROSPERO CRD42020201058).

METHODS: Our search was conducted in Medline, Embase and CENTRAL databases, from inception to July 2020, for all studies reporting on the effect of doxycycline versus placebo or non-exposure on aneurysm growth. Articles were screened and data appraised and extracted by two authors. Data were pooled using a random effects model, and quantitative analysis was performed using the Review Manager Version 5.4 (The Cochrane Collaboration, 2020). Statistical heterogeneity was reported through the I2 measure. Main outcome was the mean difference in aneurysm growth during the time of the study. Secondary outcome was the risk ratio of progression leading to aneurysm diameter eligible for repair.

RESULTS: A total of 695 articles were pooled. After title and abstract review, 20 were fully evaluated and only 3 met the criteria for qualitative and quantitative synthesis. All studies were randomized placebo-controlled clinical trials. Different daily doses of doxycycline and follow-up periods were used. Baxter et all studied 100mg td for an intended follow-up of 2 years, Meijner et al. 100mg od for a follow-up of 18 months and Mosorin et al. studied 150mg od for 3 months, for a follow-up of 18 months. Initial aneurysm diameters also varied, in Baxter et al., patients were included with diameters of 3.5-5.0cm for men and 3.5-4.5cm for women, in Meijner et al., AAA between 3.5-5.0cm and in Mosorin et al. AAA between 3-5.5 cm. Outcome assessment also varied, with CTscans in the first vs abdominal ultrasound in the latter two studies. A total of 572 patients were analyzed, 290 in the doxycycline and 282 in the placebo arm. Baseline aneurysm diameter was similar in both groups except for Mosorin et al., which had non-significant higher baseline diameter in the placebo group. This study, however, showed a high risk of bias due to unclear risk regarding sequence generation, selective outcome reporting and baseline differences. Doxycycline did not show a reduction in aneurysm growth, with a pooled mean difference between groups of 0.24mm (95%CI -0.61 to 1.08; p=0.58; I2 65%). The need for surgical repair also appeared unaltered (pooled risk ratio 1.19 (95%CI: 0.70 to 2.03; p=0.52; I2 17%).

CONCLUSION: Results obtained show that doxycycline was not effective in preventing both small AAA growth and need for repair. This might be explained by other interactions in the cascade that dull this effect. A continuous need for research, both in therapeutic strategies and maybe even in our core preconceptions of pathophysiology of AAA may be at stake.

CO 15
Inflammation and chronical limb threatening ischaemia

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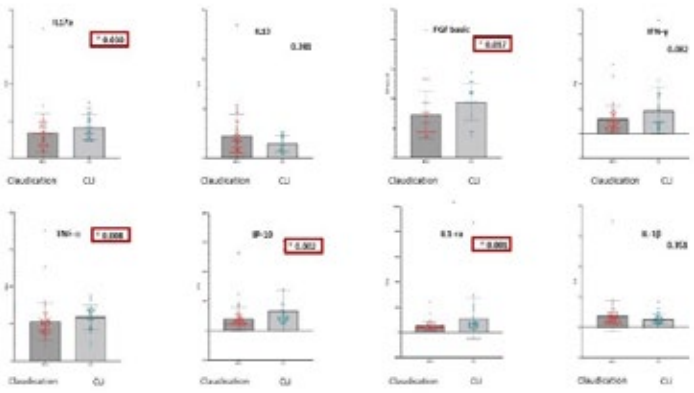
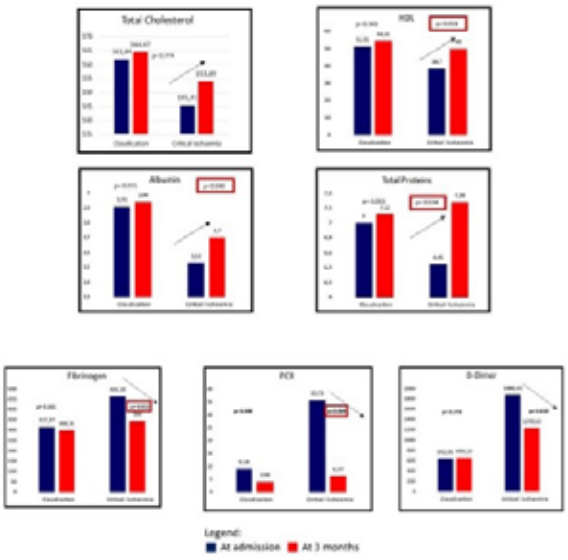
INTRODUCTION: Lower extremity peripheral arterial disease (PAD) is one of the most common manifestations of atherosclerosis. Atherosclerosis is a chronic inflammatory disease of the vessel wall and inflammation is deeply involved in the initiation and progression of atherosclerosis. This study aims to determine the differences in the inflammatory parameters of patients with claudication and with chronical limb threatening ischaemia (CLTI). The second goal is to analyze the evolution of inflammatory parameters after revascularization in patients with CLTI.

METHODS: An observational, prospective, longitudinal study, including patients with PAD, was conducted from january 2018 to december 2021. Inclusion criteria: patients with PAD suggested by the clinical history and objective examination and confirmed with ankle-brachial index. The patients were observed at admission or immediately prior revascularization and after three months. The following data was registered at this two time-points: clinical characteristics; cardiovascular risk factors, usual medication, routine analytic evaluation and inflammatory parameters. The inflammatory parameters registered were: positive acute phase proteins (C-reactive Protein- CRP- and fibrinogen), negative acute phase proteins (albumin, total cholesterol and high-density lipoprotein- HDL). A panel of cytokines were measured at admission (Bio-Plex Pro Human Cytokine 27-plex Assay #M500KCAF0Y- Bio-Rad Laboratories).

RESULTS: 116 patients (mean age: 67.65±9.53 years-old) 64% with claudication and 46% with CLTI were enrolled in the study. No differences were registered between patients with claudication and CLTI on age, cardiovascular risk factors and medication. Analyzing the inflammatory parameters, we noted that patients with CLTI, compared with claudicants had increased serum levels of positive acute phase proteins: CRP (35.73±46.61mg/L versus 9.18±26.12mg/L, p=0.000), and fibrinogen (466.18±208.07mg/dL versus 317.37±79.42mg/dL, p=0.000). CLTI patients had decreased negative acute phase proteins: albumin (3.53±0.85g/dL versus 3.91±0.72g/dL, p=0.001), total cholesterol (145.41±38.59mg/dL versus 161.84±34.94mg/dL, p=0.013) and HDL (38.70±12.19mg/dL versus 51.31±15.85mg/dL, p=0.000). CLTI patients also had significantly higher cytokines serum levels (TNF-□; IL-1ra; IL-17a; FGF basic; IP-10)(Fig. 1). When analyzing the data at the third month of follow-up, it became evident that after resolution of CLTI there is a reversion in the inflammatory parameters (Fig.2). In CLTI patients there is an increase in negative acute phase proteins (albumin, total cholesterol and HDL) and a decrease in positive acute phase proteins (CRP, fibrinogen, albumin)(Fig. 2). Analyzing these data, in patients with claudication, no significant changes were noted at three months of follow up(Fig.2). Despite this "inflammatory improvement" in patients with CLTI, their "inflammatory burden" remains higher than in claudicants (Fig. 2).

CONCLUSION: Patients with CLTI have an inflammatory state, with potential deleterious consequences, that can be at least partially reversed after revascularization. Recognizing that patients with CLTI have an inflammatory state with lethal consequences, that can be partially reversed is an opportunity to implement a timely revascularization and to optimize medical treatment.





CO 16

Abordagem endovascular como terapêutica de primeira linha nas malformações arterio-venosas congénitas

Andreia Pinelo, Luís Loureiro, Paulo Almeida, Daniel Mendes, Carlos Veterano, Henrique Rocha, João Castro, Henrique Almeida, Miguel Queirós, Rui Almeida

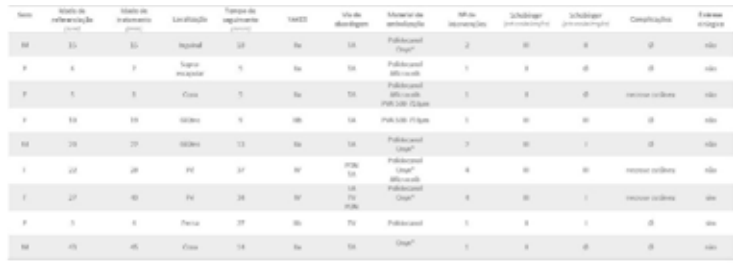
Centro Hospitalar Universitário do Porto

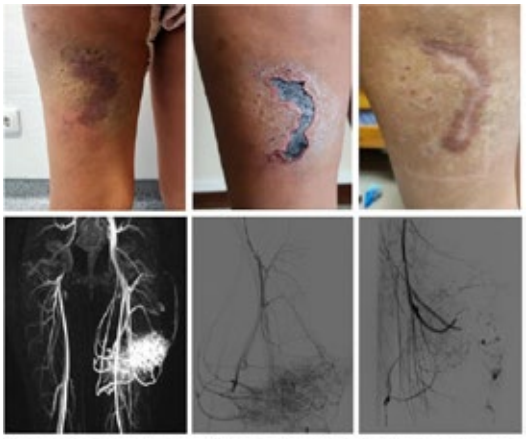
INTRODUÇÃO: As malformações vasculares congénitas são entidades com um amplo espectro de apresentações e prognóstico variável, manifestando-se desde pequenas lesões cutâneas com envolvimento apenas capilar até grandes comunicações arterio-venosas com sintomas compressivos e impacto hemodinâmico. Apresentam-se tipicamente em idade jovem e estão historicamente associadas a cirurgias de ressecção extensas e com elevada morbilidade associada. Este trabalho tem como objetivo avaliar os resultados da embolização de malformações arterio-venosas como abordagem de primeira linha.

MATERIAIS E MÉTODOS: Foi realizada uma análise retrospetiva dos casos clínicos de doentes com malformações arterio-venosas submetidas a embolização no nosso centro entre 2019 e 2021. Foi aplicada a Classificação de Schöbinger para categorização do estadio clínico e os achados angiográficos foram reportados conforme a Classificação de Yakes. A diminuição do grau de Schöbinger após tratamento, a necessidade de reintervenção e as complicações associadas foram os principais outcomes considerados. Tendo em conta o reduzido número de doentes incluídos na série foi apenas realizada uma análise estatística descritiva.

RESULTADOS: Foram avaliados 9 doentes submetidos a embolização de malformações artério-venosas, todas do tipo extratroncular infiltrativo, contabilizando-se um total de 17 intervenções. Verificou-se uma preponderância do sexo feminino (n=6; 66,7%) e a idade média de referenciação à consulta de Cirurgia Vascular e do primeiro tratamento foi de 16,8 (±12,9) e 20,9 (±14,5) anos, respetivamente. Todos os doentes se encontravam em estadio II (n=4; 44,4%) ou III (n=5; 55,6%) de Schöbinger. O tipo de MAV, classificado através do estudo angiográfico segundo a Classificação de Yakes, guiou a abordagem. O subtipo IIa foi encontrado mais frequentemente (n=5; 55,6%), seguido pelo tipo IV (n=2; 22,2%), tipo IIb (n=1; 1,1%) e tipo IIIb (n=1; 1,1%). Os doentes foram submetidos a embolização da MAV por via transarterial, transvenosa ou por punção direta do nidus com agentes esclerosantes, embolizantes líquidos, micropartículas e microcoils, em separado ou em combinação. O número mediano de intervenções por doente foi de 1 (1 – 4) e o tipo IV de Yakes parece estar associado a uma maior taxa de reintervenção. A redução do estadio de Schöbinger foi conseguida em 7 (77,8%) doentes com resolução clinica em 3 (33,3%). A necrose cutânea foi a única complicação reportada nesta série (n=3; 33,3%).

CONCLUSÕES: O tratamento endovascular de malformações arteriovenosas através da embolização do nidus e/ou aferentes/eferentes requer uma caracterização angiográfica pormenorizada mas parece ser uma estratégia terapêutica eficaz e com baixo risco de complicações. A classificação de Yakes, além auxiliar na escolha da abordagem pode ser também um preditor da necessidade de reintervenção.





CO 17
Sex disparities in peripheral arterial occlusive disease

Leonor Baldaia, Luís F. Antunes, Miguel Silva, Eduardo Silva, Celso Nunes, Vânia Constâncio, Joana Silva1, Manuel Fonseca

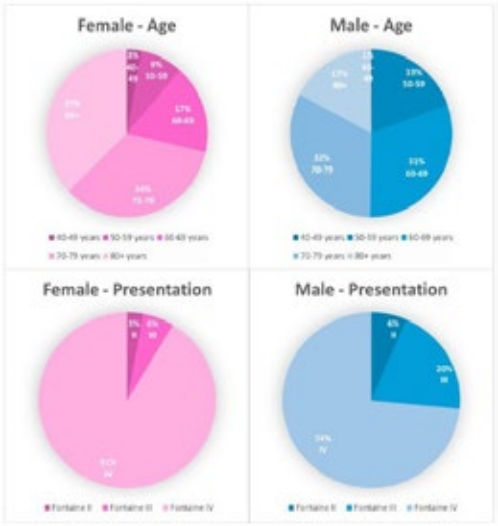
Centro Hospitalar e Universitário de Coimbra

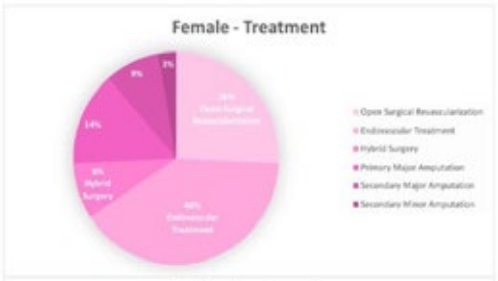
INTRODUCTION: Recently published studies on peripheral arterial occlusive disease (PAOD) have revealed marked sex disparities in patient selection and treatment outcomes. Female patients tend to be older at the time of invasive treatment, have worse peri-operative morbidity and mortality rates, and they are also less likely to be taken optimal pharmacological treatment (OPT) at long-term follow-up, compared to male patients. In a recent retrospective study published in the European Journal of Vascular and Endovascular Surgery (EJVES), with a population of 1 164 497 patients from 11 different countries, Portugal was highlighted as one of the countries with greater sex discrepancies related to PAOD treatment. We aimed to analyze sex specific differences in the treatment of symptomatic PAOD, concerning different variables, in a single hospital centre, in Portugal.

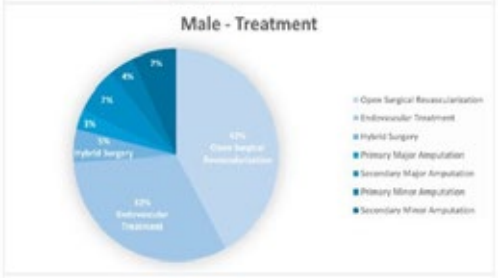
METHODS: Data on treatment of symptomatic PAOD patients from October 1st, 2020, to December 31st, 2021, were retrospectively collected from clinical registries from a single portuguese hospital centre. Different variables were analyzed dichotomized by sex, such as discrepancies in age, comorbidities, presentation (Leriche-Fontaine classification II, III or IV), treatment modality, mean length of hospital stay, and pharmacological treatment for PAOD at the time of invasive treatment. Differences in post-operative outcomes (90-day mortality and 90-day need of a major amputation) were also assessed.

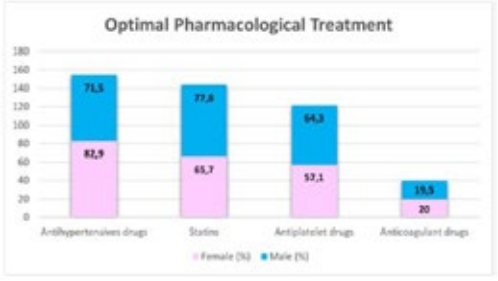
RESULTS: A total of 220 patients, 15,9% female and 84,1% male, were treated for PAOD, in the selected period, in a hospital centre from Portugal. Female patients were older (mean age of 73.8 years versus 69.5 years in male patients) and had a higher proportion of octogenarians (37.1% versus 17.3% in the male group). Comorbidities distribution was similar between the two sex groups, except for known smoking history that was much more prevalent in men with PAOD, compared to women (49.7% male versus 8.9% female). Women were less likely to be treated for intermittent claudication (Leriche-Fontaine classification II in 3% of women versus 6% of men). Instead, they were more often treated at a more advanced stage of the disease with trophic lesions (Leriche-Fontaine classification IV in 91% of women versus 74% of men). Female patients were more frequently treated with endovascular procedures (40% versus 26% treated with OSR), with the opposite occurring for male patients (42% treated with OSR versus 32% treated with endovascular procedures). Hybrid surgery was performed in 8% of the female versus 5% of the male patients. Females were significantly more likely to be offered primary major amputation (14% versus 3% of male patients). Also, they were less likely to be taken statins as part of PAOD OPT (65.7% versus 77.8% of male, with a total discrepancy of -12.1%). Although 90-day mortality rate was higher in women (17.1% versus 6.5% in men), they had a lower 90-day major amputation rate (5,7% versus 11,4% in men).

CONCLUSIONS: Remarkable sex discrepancies in the treatment of PAOD were found in our portuguese hospital centre. This study brings awareness to the scientific medical community for sex disparities in the management of patients with PAOD. Future research is needed to better understand the impact of selection sex bias in PAOD treatment outcomes.









CO 18

Ultra-distal revascularization in chronic limb-threatening ischemia: results are never out of fashion

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Hospital Beatriz Ângelo

INTRODUCTION: The progression of diabetes mellitus to a global epidemic resulted in an increased prevalence of tibioperoneal disease in chronic limb-threatening ischemia (CLTI). Distal disease still poses an enormous challenge to vascular surgeons. Crural angioplasty was formerly restricted to patients with short stenotic lesions or to poor candidates for bypass surgery. Despite the heterogenous results, endovascular therapy has been used preferentially over bypass surgery in most centers.
Aim: To analyze the results of open ultra-distal revascularization in a single-center with a limb preservation program for CLTI.

METHODS: A single-center retrospective analysis of all patients with CLTI submitted to below the ankle bypass. The end points of the present study were limb-based patency (LBP), primary patency (PP) and secondary patency (SP) rates, freedom from CLTI, freedom from new CLTI, freedom from major index limb amputation, amputation free-survival, and overall survival. Patients were categorized in subgroups based on age (above or below 75 years), dialysis status, wound and infection grade (0 and 1 vs 2 and 3 in WIfI classification). Statistical analysis was carried out using Stata 12.1 (StataCorp®, Lakeway Drive, College Station, Texas, USA). Time-to-event end points were presented with Kaplan–Meier estimates, censored at major amputation, death, or last follow-up, and compared with the logrank test.

RESULTS: A total of 134 limbs in 123 patients with CLTI (83% male, median age of 68 years) were submitted to below the ankle bypasses. The median follow-up was 33.7 months. LBP, PP and SP were, respectively, 78%, 78% and 92% at 1 year, 73%, 73% and 88% at 2 years, and 62%, 62% and 79% at 4 years. At 1 year, 83% of the limbs were free from CLTI. 89% and 74% of the limbs remained without recurrences during a follow-up of 2 and 4 years, respectively. Eighty-two percent of the patients were free from major index limb amputation at 4 years. 30-day mortality was 1.6% (2 patients). 1-year and 2-year survival was 90.5% and 82.5%, respectively. Age, dialysis status and wound/infection grade (WIfI classification) did not influence patency rates.

CONCLUSIONS: Below the ankle bypass is safe and has excellent clinical outcomes. The present study emphasizes the value of open surgery in a challenging territory, with high rates of patency, limb salvage, freedom from CLTI and from new CLTI. These results were not affected by patient status or clinical severity factors. Ultra-distal revascularization is a first line treatment that every vascular surgeon involved in CLTI should master.

CO 19

An systematic review of the natural history of donor artery aneurysm degeneration after arteriovenous access for hemodialysis

Daniel Azevedo Mendes, Sérgio Teixeira, Rui Machado, Paulo Almeida, Carlos Veterano, Henrique Rocha, João Castro, Andreia Pinelo, Henrique Almeida, Miguel Queirós, Rui de Almeida

CHUC

INTRODUCTION: True aneurysms of the upper extremity arteries are rare, usually associated with trauma or infection. Arterial aneurysmal degeneration could also occur proximally to arteriovenous hemodialysis access, a complication that has been reported more frequently.
This study aims to define the anatomical characteristics and natural history of true arterial upper extremities aneurysms associated with hemodialysis arteriovenous access.

METHODS: We performed a systematic review of the literature in the MedLine, Scopus, and Cochrane databases from 1991 to 2021. Cases of pseudoaneurysms and anastomotic aneurysms were excluded. A total of 47 articles referring to 98 patients were included. Demographic characteristics, patient comorbidities, history of vascular diseases, detailed characteristics of vascular access (location and duration), symptoms, previous kidney transplant, surgical or endovascular treatment, and follow-up were analyzed. A database was constructed based on the reported clinical data from each patient. Since we only identified case reports and small series, no meta-analysis could be performed.

RESULTS: Most patients included were male (85%) with a mean age of 51 years (20-77 years). The brachial artery was the most frequently affected in 87% of cases (n=86), with the axillary and radial arteries being less affected. The most associated vascular accesses were autologous radiocephalic arteriovenous fistulas in 57% (n=56) and brachycephalic fistulas in 39% (n=38). Most patients had a history of kidney transplantation (88%; n=86) and previous vascular access ligation or thrombosis (84%; n=82). The median time from access ligation to aneurysm diagnosis was ten years (range 1-32 years), and the median time from kidney transplantation was 13 years (range 1-32 years).

Only 8% of patients (n=8) had a history of diabetes mellitus. Treatment was open surgery with interposition bypass or end-to-end reconstruction in most cases, and endovascular treatment was only reported in one patient to repair a ruptured axillary artery aneurysm. The median follow-up of the vascular reconstructions was 12 months (range 1-72 months), and no stenosis or thrombosis of the vascular reconstructions was reported.

CONCLUSION: Aneurysmal degeneration of the inflow artery proximal to the hemodialysis vascular access must be understood as an individualized entity with specific characteristics. It usually affects the brachial artery after kidney transplant and is more associated with wrist arteriovenous fistulas after ligation of the vascular access. Our review suggests that donor artery aneurysm degeneration screening with ultrasound should be considered 10 to 15 years after access ligation and kidney transplant.

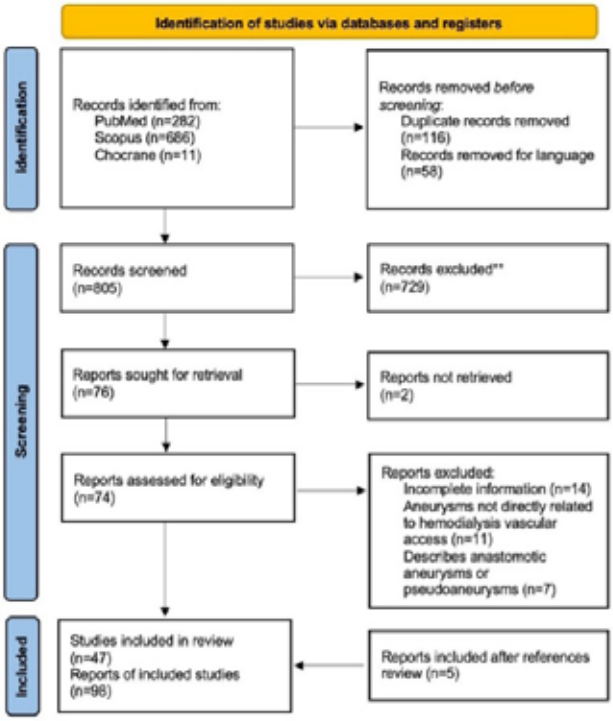

Fig 1. PRISMA flow diagram.

CO 20

Outcomes of varicose vein surgery within hiv/aids population - nested case-control study

António Pereira-Neves, Diogo Domingues-Monteiro, Leandro Nóbrega, Luís Duarte-Gamas, Alfredo Cerqueira, João Rocha-Neves, José Oliveira-Pinto, Armando Mansilha

CHUSJ

INTRODUCTION: Nowadays, people living with HIV/AIDS (PLWHA) attain a life expectancy similar to a non-HIV population. However, these patients experience a status of chronic inflammation, which is a known cause of arteriopathy. Yet, literature is scarce regarding the potential venous inflammatory effect, especially after varicose vein surgery. The aim of this study was to perform a descriptive analysis alongside evaluating short and long-term outcomes after varicose vein surgery in PLWHA while comparing with a control group.

METHODS: A retrospective nested case-control study was performed. A retrospective review was performed, in a tertiary university hospital's database, resorting to ICD 9 codification. All PLWHA patients which had any hospital interaction with the Vascular Surgery Department (either outpatient clinic, emergency or surgery) due to venous disease between April 2006 and December 2019 were identified. PLWHA found to have undergone varicose vein surgery within the study inclusion period were included. The immediately consecutive varicose vein surgery in a patient with no-HIV infection was included in the control group in a 1:1 ratio. Comorbidities were collected at the time of index event. Clavien-Dindo classification was adopted for surgical complications.

RESULTS: The cohort included 118 patients (59 PLWHA and 59 control) and had a mean follow-up of 86 [Interquartile range (IQR) 25-75%, 43-111] months. At baseline, PLWHA were younger (45.2 ± 10.71 vs 49.9 ± 10.69 years, p=0.017) and had a male predominance (54% vs 27%, p=0.003). Furthermore, there were a higher prevalence of smokers (54% vs 17%, p<0.001) and history of drug abuse (34% vs 2%, p<0.001) in the study group. Although not statistically significant, PLWHA presented higher pre-operative CEAP classifications. Regarding post-operative outcomes, no differences were found for complications, reinterventions or overall-mortality.

CONCLUSION: To the authors knowledge, this is the first study addressing varicose vein treatment in PLWHA. In summary, PLWHA undergoing varicose vein surgery seem to be younger and have higher CEAP classifications. Nonetheless, short and long-term outcomes seem to be good and similar to a control population. Further studies with larger populations and disease specific outcomes are necessary to confirm such findings.

Table 1 - Demographics

Demographics	HIV + n=59 (%)	HIV - n=59 (%)	P - value
Age (years)	**45.2 ± 10.71**	**49.9 ± 10.69**	**0.017**
Male Gender	**32 (54)**	**16 (27)**	**0.003**
Dyslipidemia	24 (41)	18 (31)	NS
Hypertension	11 (19)	18 (31)	NS
Diabetes	4 (7)	9 (15)	NS
Smoker	**32 (54)**	**10 (17)**	**<0.001**
CAD	5 (8)	4 (7)	NS
CKD*	6 (10)	2 (3)	NS
BMI >30	9 (15)	8 (14)	NS
History of Drug Abuse	**20 (34)**	**1 (2)**	**<0.001**
Previous Surgery	6 (10)	11 (19)	NS
History of DVT	1 (2)	1 (2)	NS
Deep Vein Pathology	0 (0)	1 (2)	NS
CEAP Classification			
C2	34 (58)	39 (66)	
C3	9 (15)	12 (20)	NS
C4	1 (2)	1 (2)	
C5	2 (3)	0 (0)	
C6	3 (5)	0 (0)	

*GFR <60mL/min Cockcroft-Gault

Legend: BMI - body mass index; CAD - coronary artery disease; CKD - chronic kidney disease; DVT - deep vein thrombosis; NS- Non-significant

Table 2 - Outcomes

Outcomes	HIV + n=59 (%)	HIV - n=59 (%)	P - value
30-day Urgency Department Visit	3 (5)	5 (8)	NS
Complications*	3 (5)	6 (10)	NS
PREVAIT with Re-operation	5 (8)	8 (14)	NS
Mortality	1 (2)	1 (2)	NS

* Clavien-Dindo ≥1

Legend: NS- Non-significant; PREVAIT - PREsence of Varices (residual or recurrent) after InTervention

CO 21

Aortobifemoral bypass and endovascular procedures in aortoiliac occlusive disease: a systematic review and metanalysis

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OBJECTIVE: Aortoiliac occlusive disease (AIOD) can be treated using either open surgical repair (OSR) or endovascular repair (ER). The aim of this review was to report limb patency and re-interventions, as well as on risk factors and management.

METHODS: A systematic review was conducted according to the recommendations of the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) statement.

RESULTS: After a PubMed and Cochrane search, five studies were included. A total of 712 patients (71.2% male) were assessed. OSR group comprised 335 patients (47.1%) and ER group included 377 patients (52.9%). Clinical presentation was chronic limb threatening ischemia (CLTI) in 23.6% and 20.6% of patients in OSR and ER groups, respectively. The number of patients with reported TASC C and D lesions patients were 217 (30.5%) and 446 (62.6%), respectively. TASC D patients were more commonly treated with open surgery (OR 3.05, 95% CI 1.21, 7.68).

Both populations were similar concerning cardiovascular risk factors, but in the ER group patients were older than in OSR group (OR -4.31, 95% CI -6.50, -3.12). Adjunctive femoral endarterectomy was performed in 115 (34.3%) patients in the OSR group and in 97 (25.7%) patients in ER group. Length of stay (LOS) was shorter was 3.9 days for ER and 10.7 days for OSR group (OR 6.44, 95% CI 5.93, 6.96). Reported antiplatelet follow-up regimens for ER patients included dual antiplatelet regimen with aspirin and clopidogrel for six weeks to 24 months, and then aspirin alone. All OSR patients were prescribed with aspirin alone.

Primary patency rates at six years for OSR vs ER ranged from 91-95.5% vs 81.4-83% (OR 2.75, 95% CI 1.75, 4.32) and secondary patency 97-98% vs 85-93% (OR 5.00, 95% CI 1.92, 13.05), respectively. Post-procedural limb thrombosis was reported in 5.7% in OSR group and 13.7% in ER group. In this meta-analysis, there was a higher re-intervention rate in the ER group (OR 0.37, 95% CI 0.15, 0.93).

Mean overall follow-up was between 1-96 months and follow-up strategy comprised clinical evaluation and duplex ultrasound (DUS) at 3, 6, 12 months and annually thereafter. OSR showed a tendency towards higher mortality that did not reach statistical difference (odds ratio 7.31, 95% CI 0.85, 63.07, p = 0.07).

Several studies concluded that female sex, hyperlipidemia and ipsilateral superficial femoral artery disease with iliac artery occlusion were independent risk factors associated with loss of primary patency in the ER group, with no statistically significant independent predictors for loss of primary patency in the OSR group.

CONCLUSIONS: Although OSR still presents a significantly better long term patency than the currently available endovascular strategies for TASC C/D AIOD associated morbidity and delay in return to normal activities are greater than for the endovascular approach. The ER group had a shorter LOS at a cost of a higher re-intervention rate and shorter patency rate. Although it did not reach statistical difference, OSR showed a tendency towards higher mortality, reflecting the post-operative risk in this group of patients. Only randomized controlled trials could validate outcomes between both procedures to define the best treatment option for patients with AIOD.

CR 01

Coral reef aorta: literature review and analysis of 49 published cases in the last 20 years

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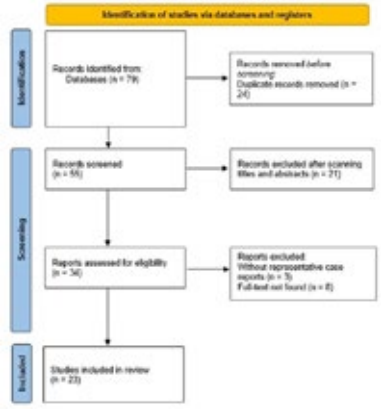
INTRODUCTION: Coral reef aorta (CRA) is a rare atherosclerotic disease characterized by heavily calcified exophytic plaques that grow into the lumen of the suprarenal and juxtarenal aorta. The etiology and pathogenesis of this entity remains unclear. Malperfusion of the intestinal, renal, and lower limbs arteries can occur as a consequence of significant stenosis, which may lead to intermittent claudication, renovascular hypertension, abdominal angina or renal insufficiency. The optimal treatment for CRA has not yet been established.

METHODS: We performed a thorough electronic search of the literature using PubMed and Embase databases. We used the following combination of key words in our search strategy ((coral reef) AND (aorta) AND (vascular surgery* OR treatment*). After duplicates removal, titles and abstracts' screening and fully reading the remaining articles, we end up with 23 studies to compose our review, with a total of 49 patients. Articles not in English were excluded. We only included articles published in the last 20 years. Information about patients' characteristics, symptoms and type of treatment were extracted. The primary outcomes were improvement of signs and symptoms and postoperative complications.

RESULTS: We studied 49 cases of patients with CRA, 27 (55%) females and 22 (45%) males, with a mean age of 59 years [37-84 years]. The main signs and symptoms encountered were intermittent claudication in 30 (61%) patients, refractory hypertension in 30 (61%) patients, intestinal angina in 15 (31%) patients, renal insufficiency in 13 (27%) patients, heart failure/acute pulmonary edema/peripheral edema in 6 (12%) patients, pain at rest in the lower limbs in 6 (12%) patients, weight loss in 3 (6%) patients, and trophic lesions in the lower limbs in 2 (4%) patients. Of all the 49 patients in the study, 38 (78%) were treated with open surgery (aortic endarterectomy, extra-anatomic bypass graft or both), 8 (16%) with endovascular treatment (balloon angioplasty, stent graft, intravascular lithotripsy, or a combination of these techniques) and 3 (6%) by laparoscopy with aortic endarterectomy and aortobifemoral bypass. The mean follow-up time was 41 months [0-180 months] after open surgery, 6 months [4-6 months] after endovascular treatment, and 23 months [1-38 months] after laparoscopic surgery. Postoperatively, most patients experienced a great relief or resolution of the symptoms, control of hypertension and/or improvement in renal function. Of the patients treated by open surgery, 4 needed reinterventions, 2 for revascularization and 2 for bleeding. Other complications included occlusion of aortic branches, splenic rupture, and brain and myocardial infarction. In the group of patients treated with endovascular procedures or laparoscopic surgery, no postoperative complications were described.

CONCLUSIONS: CRA is a rare condition, but we should be aware of this diagnosis in patients with intermittent claudication, refractory hypertension, renal impairment, or intestinal angina. From what we gathered, both open surgery and endovascular treatment could be a valid therapeutic option. Open surgery seems to be associated with more postoperative complications and need for reintervention. However, there are less published studies about endovascular treatment and they have a significantly shorter mean follow-up time. Treatment strategy should be made by a multidisciplinary team and be specific for each individual patient.



CR 02

Is metformin the future for medical management of abdominal aortic aneurysm?

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CHUC

INTRODUCTION: The pathophysiologic mechanisms of Aortic Abdominal Aneurysm (AAA) are yet being under-covered. The imbalance of proteolytic pathways, immune/inflammatory response and oxidative stress have been shown to have a deleterious effect on the arterial wall. Paradoxically, diabetes, a known cardiovascular risk factor, might have a protective effect on the incidence, growth rate, and rupture of AAA. Metformin, one of the most prescribed drugs for diabetes have also been linked to having this same protective effect explained by its pleiotropic anti-inflammatory effects on the vasculature. However, some advocate this effect as an association with diabetes itself.

METHODS: We performed an extensive electronic search of the literature using PubMed and Embase databases. The combination of keywords used in our search strategy was the following: (Aortic abdominal aneurysm OR AAA) AND (metformin OR antidiabetic drugs OR biguanides). After removing duplicated articles and fully reading the remaining articles, our focus was established in 10 original articles in order to understand the effect of metformin on the incidence, growth rate, repair-related complications, and mortality of AAA in humans.

RESULTS: With respect to AAA incidence Hsu et al. concluded metformin was associated with a lower risk of AAA formation (OR=0.72). In fact, they suggested a dose-response effect, since smaller odds ratios were observed when the duration of treatment was longer. Five studies were focused on illustrating the association between metformin exposure and the annual growth rate decline of AAA. Generally, all showed that metformin decreased the aneurysm expansion speed. Unosson et al. found a 51% slower growth rate in the metformin group compared with the non-diabetic patients. However, a non-significant reduction of 27%, when compared to only diabetic patients. Itoga et al. reported a 20% decrease and Fujimura et al. linked metformin to a significantly slower AAA expansion. Goledge et al. and Thompson et al. reported similar results. Agniezka et al. in their retrospective study showed that metformin was an independent lowering factor for risk of AAA repair. Although, in terms of the number of complications, no statistically significant difference has been found. Sutton et al. reported a higher risk of perioperative mortality in diabetic patients, but still lower in the metformin group. Besides, non-diabetic patients had the highest rate of AAA surgery. According to Goledge et al. patients with diabetes prescribed metformin had approximately half the incidence of AAA events including aneurysm rupture, related death and need for surgery.

DISCUSSION/CONCLUSION: The prevalence and AAA growth rate are lower in diabetic patients. The studies mentioned above all tried to dissociate this factor from the metformin effect. Yet, synergistic or additive effects of diabetes and metformin are possible confounders in this type of studies. Even so, the results are promising and demanding for randomized clinical trials on non-diabetic patients, which are ongoing. The fact that metformin could be one major factor, not only in lowering the AAA formation but also in lowering the need for surgery and the risk of rupture seems promising to the future of medical treatment of AAA. Since most are discovered at an early stage, there is a window of opportunity to impede the progression of the disease, allowing to reduce the morbimortality of this pathology and its costs.

CR 03

Experiência de um serviço no tratamento de aneurismas verdadeiros dos troncos supra-aórticos

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INTRODUÇÃO: A incidência de aneurismas verdadeiros dos troncos supra-aórticos é muito baixa. Podem apresentar-se como assintomáticos ou por sintomas compressivos, de embolização distal ou, mais raramente, por rotura dos mesmos. As recomendações de diagnóstico e tratamento não são uniformes, pelo que a escolha de tratamento pode ser controversa. O objetivo deste trabalho é descrever a experiência institucional no tratamento de aneurismas verdadeiros dos troncos supra-aórticos num centro terciário de Angiologia e Cirurgia Vascular.

MÉTODOS: Análise retrospetiva de todos os doentes tratados por aneurismas verdadeiros dos troncos supra-aórticos no serviço de Angiologia e Cirurgia Vascular de um Hospital Terciário, durante o período de 1 Janeiro de 2011 a 31 de Dezembro de 2021. A taxa de mortalidade é o endpointprimário e o tempo de internamento em enfermaria ou UCI é o endpoint secundário.

RESULTADOS: Durante um período de 11 anos, um total de 7 doentes foram tratados por aneurismas verdadeiros dos troncos supra-aórticos, dos quais: 4 por aneurismas da artéria carótida interna (ACI) e 3 por aneurismas da artéria subclávia. Nenhum destes doentes apresentava história de trauma anterior. A idade média foi de 58 anos (24-77 anos) e 57% (n=4) eram do sexo feminino. Relativamente à sintomatologia associada: a maioria (n=4) eram assintomáticos, 2 doentes apresentaram-se com história de lipotímias de repetição e 1 doente possuía uma massa cervical lateral pulsátil. O diâmetro máximo dos aneurismas tratados foi em média de 46 mm (21-84mm). Todos os doentes foram tratados de forma eletiva e o tratamento convencional foi o método de tratamento preferido (usado em 5 dos 7 doentes). Os doentes com aneurisma carotídeo (n=4) foram submetidos a: excisão de aneurisma carotídeo e anastomose topo-a-topo da ACI (n=2); transposição carótida externa-interna (n=1) e a interposição da artéria carótida comum-ACI com veia (n=1). Os doentes com aneurismas da artéria subclávia (n=3) foram submetidos a: bypass carótido-carotídeo e TEVAR (n=1); interposição do tronco braquiocefálico- artéria subclávia (n=1) e a embolização com coils de aneurisma da artéria subclávia (n=1). Apenas num dos doentes foram observadas complicações, nomeadamente, endoleak tipo 1b e hematoma do local de acesso. Não foram observados óbitos e os doentes estiveram em média 14 dias internados.

CONCLUSÃO: Apesar de existirem poucos estudos que caracterizem o tratamento de aneurismas verdadeiros das artérias dos troncos supra-aórticos, este tipo de patologia pode estar associado a morbilidade considerável (particularmente os casos sintomáticos), pelo que o seu tratamento embora não esteja padronizado pode prevenir complicações graves.

Palavras-chave: aneurismas verdadeiros; troncos supra-aórticos; cirurgia vascular; morbi-mortalidade.

CR 04

Six-months results of an high-pressure angioplasty balloon for treatment of hemodialysis vascular access stenosis

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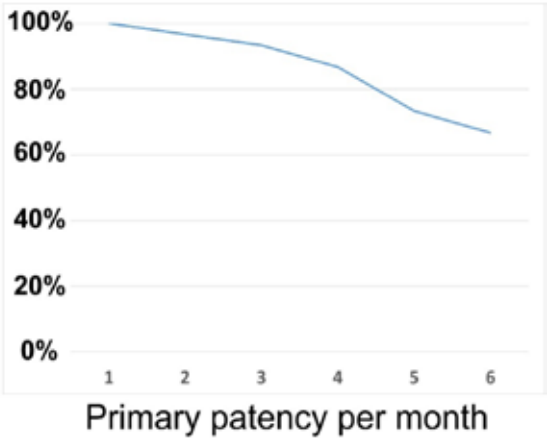
OBJECTIVES: Hemodialysis vascular access stenosis continues to be a predominant factor leading to access failure. We attempted to determine the safety and efficacy of a new high-pressure angioplasty balloon for the treatment of vascular access stenosis.

METHODS: We reviewed all cases of vascular access angioplasty using a new high-pressure balloon between March, 1, 2021, and September 9, 2021, at our group. Procedural details were examined, including technical success, patency rates, and complications within 6 months of intervention.

RESULTS: A total of 67 patients were identified, 39 males and 28 females, with a median age of 74 years (range, 22- 92). Two patients had Gracz AV fistulas, 11 AV grafts, 16 radiocephalic AV fistulas, 12 transposed brachiobasilic AV fistulas, and 26 brachiocephalic AV fistulas. Preintervention fistulography demonstrated inflow, outflow or/and interaneurysmal stenosis in all patients studied. High-pressure balloon angioplasty was selectively performed at the area of stenosis with balloon insufflation times between 120 and 180 seconds. The balloon diameter ranged from 6 mm to 10 mm, with the 7-mm balloon most frequently used (37), followed by the 8-mm (17). Technical success was 90%. Seventeen inflow, 48 outflow and 16 interaneurysmal stenosis were treated. Four patients needed drug eluting stent/stent-graft implantation due to recurrent immediate recoil, and 1 patient needed stent-graft due to vein rupture. Six months primary patency was 67%. Twenty patients required reintervention to maintain AV access patency within the study time period. One patient was submitted to drug eluting stent implantation, stent-grafts were implanted in two other patients. The other 17 patients were submitted to balloon angioplasty alone. Mean follow-up time was 9 months (range, 7-13).

CONCLUSIONS: Our experience with this new high-pressure angioplasty balloon for dialysis access stenosis suggests that it is a safe and feasible option for treating failing vascular access. Six-months primary patency is slightly better than the ones published for plain balloon vascular access angioplasty.



CR 05

Symptomatic carotid stenosis occurred frequently in patients with previously known obstructive lesions

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CHULN

Patients with asymptomatic carotid stenosis are at an increased vascular risk, but optimal treatment is controversial. The publication of the Oxford Vascular Study has once again put the spotlight on the best management of asymptomatic carotid disease reopening the discussion over this subject by the current ESVS guidelines. In this study, we aimed to establish if there is an association between the presence of asymptomatic carotid artery stenosis and ipsilateral stroke in patients submitted to surgical/endovascular treatment of significant symptomatic carotid artery stenosis with previous diagnosis for carotid disease. We performed a cross-sectional study based on a retrospective analysis of all the patients who were operated in our centre due to a symptomatic carotid stenosis over 50%. Risk factors and demographic characteristics of the patients and lesions were analysed. Previous diagnosis or follow- up for carotid stenosis was assessed through the search in the patients' electronic records. A total of 89 patients were operated in our population. The mean age of the population was 73 years, from 54 to 92 years (standard deviation 9 years) and 79.8% were male. All cases were studied through doppler ultrasound (DUS) and mean stenosis degree was 85.1% (SD 10.5%). From the population of 89 patients, 19 or 21.3% already had an ipsilateral stenosis before becoming symptomatic, 18 were already followed by a vascular surgeon, 11 had indication for surgery (asymptomatic stenosis over 70%) while 4 were proposed for surgery. Six patients were followed in vascular surgery for lower limb peripheral arterial disease but had no study for carotid/vertebral disease. One patient had an ipsilateral stenosis detected by a primary care physician but was not referred to vascular surgery.

Ten patients already underwent a carotid endarterectomy, 1 ipsilateral and 9 contralateral to the symptomatic stenosis. The restenosis case was managed through carotid stenting and had no restenosis in the follow-up DUS. Of the other 9 patients with a carotid endarterectomy contralateral to the symptomatic stenosis, 4 had indication for surgery in the follow-up DUS while 2 were proposed for surgery. Most cases were managed through carotid endarterectomy in 97.8%, while only 2 carotid stenting procedures were performed. In conclusion, a significant number of patients operated for symptomatic carotid stenosis had previously documented carotid disease. This work supports the findings of the OxVasc study and the role of surgical treatment of asymptomatic carotid stenosis in prevention of disabling or fatal stroke.

CR 06

Defying the odds – best treatment strategy option for larger than 80mm abdominal aortic aneurysms

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INTRODUCTION: Abdominal aortic aneurysm (AAA) diameter is the standard basis for predicting rupture risk, with aneurysms >8cm having reported annual rupture risk of up to 50%. Larger AAA's pose several challenges both during repair and follow-up. Endovascular aortic repair (EVAR) in these cases shows poorer long-term outcomes, more re-interventions and lower freedom from rupture and survival. Open repair (OR) might be more challenging due to unique anatomic features in large AAAs, including inexistent or short necks, adherence to adjacent structures or co-existence of large iliac aneurysms.

METHODS: 10-year retrospective analysis of consecutive patients with larger than 80 mm abdominal aorto-iliac aneurysm repaired either by EVAR or OR in our center between January 2012 and March 2022.

RESULTS: During the study period, 22 patients were treated, 12 by OR and 10 by EVAR (9 aorto-bi-iliac EVAR, 1 aorto-uni-iliac). Mean age was 75 years, and mean aortic diameter was 89 mm. Eight patients (36%) were treated urgently due to symptoms (3 EVAR and 5 OR), 18% with rupture (1 EVAR and 3 OR). Thirty-day mortality in elective cases was 0% and in ruptured cases was 25% (1 case treated by OR in a ruptured AAA with aortocaval fistula complicated with bilateral acute limb ischemia and shock).

On the EVAR group, 6/10 patients developed late endoleaks (2 type Ia, 2 type Ib, 2 type II) and one patient with no identified endoleak but sac growth, 3 of which were previously treated in an urgent setting. Late reintervention rate was 40% (two distal extensions, two proximal cuffs plus double chimneys for renal arteries, one of which had also inferior mesenteric artery embolization). One patient (10%) died at the fifth year post operatively, due to aneurysm related complications. Three others died, at 6 months, 4 and 8 years post operatively, with unidentified cause.

On the open surgery group, two patients had postoperative complications (one stroke with ataxia and one large incisional hernia). Mean duration of intensive care unit (ICU) and hospital stay in patients with large AAA who underwent OR were, respectively, 2.5 and 13.5 days in elective cases and 8.6 and 14.5 days in the urgent cases, higher when compared to non-large (< 8 cm) patients treated by OR in our center. Need for blood transfusion was also higher in this subgroup, as well as compared to the EVAR group. Four patients died during follow-up due to unknown causes, presumably non-aneurysm related.

A limited number of cases for a robust statistical analysis due to the rarity of these large AAAs is a limitation of the study.

CONCLUSION: 30-day mortality wasn´t higher in patients treated for large > 8 cm AAA compared to non-large AAA, either by OR or EVAR, in elective and urgent settings. The complexity of the case reported as the only death associated with OR must be taken into account and might bias conclusions. The rate of late endoleak seems to be higher in this cohort than described in literature for the standard EVAR for smaller aneurysms. When patients were submitted to OR, duration of ICU and hospital stay and transfusion need was higher but there was no need for aneurysm related reinterventions. When treating such large AAA, each case should be individualized, depending on patients' comorbidities, presentation, suitable anatomy and center experience.

CR 07

Infected abdominal aortic endograft: a tertiary center experience and literature review

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INTRODUCTION: Endovascular aneurysm repair (EVAR) has undergone explosive growth over the last 2 decades. EVAR reduces complications and perioperative mortality but also creates new problems, such as aortic endograft infections (AEgIs). The incidence of AEgIs is about 0.3–2% and mortality rates range from 25 to 75% being a life-threatening condition. The aim of this study was to assess the management of AEgIs in patients submitted to endovascular abdominal aortic aneurysm repair at our tertiary center and integrate findings with current literature.

METHODS: The Management of Aortic Graft Infection Collaboration (MAGIC) criteria were used to define AEgIs. Patients fulfilling these criteria and admitted at our center were included in the study. Clinical history, surgical and peri-operative data, morbidity and mortality were retrospectively assessed. Additionally, a review of literature was conducted in MEDLINE via PubMed using the terms abdominal aortic endograft and infection. The search was restricted to studies performed in humans and published in English or Portuguese within the last 5 years. Results: Four cases of AEgIs were identified; one case developed an early infection, while 3 cases were diagnosed as late infections. Most frequent symptoms at presentation were abdominal/lumbar pain (100%), malaise (75%) and fever (50%) and all had elevated levels of C-reactive protein and erythrocyte sedimentation rate. One patient developed a psoas abscess. All patients had been submitted to additional procedures due to endoleak treatment after index EVAR before the AEgIs diagnosis. One case was managed with endograft explantation (EE) and extra-anatomical bypass (EAB), one case with EE and “in situ” reconstruction (ISR) using a silver coated Dacron graft and one case exclusively with antibiotic therapy. One patient was selected for EE but due to hemodynamic instability during procedure explantation was not feasible. In our cohort mortality rate was 75%. Literature review identified 76 potential relevant articles, but after analysis only 29 studies were related with abdominal aortic endograft infection. Different surgical methods have been reported to treat AEgIs, such as EE and debridement followed by either EAB or ISR using autologous vein, cryopreserved allograft, or antibiotic-soaked prosthetic grafts. The Management Guidelines for Vascular Graft and Endograft Infections reported significantly better outcomes for ISR rather than EAB, however a recently published Nationwide Multicenter Study reported no differences in survival or re-infection rate. In our cohort the patient submitted to EAR was the only case of survival and the patient submitted to ISR died before discharge. EE, debridement, and reconstruction is considered the gold standard treatment although these methods may not always be the best option for all patients. One case reported the administration of a course of antibiotics and percutaneous drainage with good results in a selected patient.

CONCLUSION: AEgIs is a rare complication after EVAR. EE is the gold standard of treatment; however, given the overall high morbidity and mortality rates of this pathology, a tailored approach should always be offered depending on the patient's overall condition. Due to the rarity of AEgIs, centralization of its treatment could contribute to improve surgical outcomes.

CR 08

Preditores de sobrevida e preservação de membro na isquemia aguda

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INTRODUÇÃO: A isquemia aguda de membro está associada a significativa morbimortalidade perioperatória. Com o presente estudo, pretendemos determinar os indicadores laboratoriais associados a aumento de mortalidade e amputação major, após revascularização de membro por isquemia aguda.

MÉTODOS: Apresentamos um estudo retrospectivo, unicêntrico, com inclusão dos doentes submetidos a um procedimento de revascularização, por isquemia aguda de membro superior ou inferior, num hospital terciário, entre Agosto de 2020 e Janeiro de 2021. Foi determinado o nível máximo de creatina cinase (CK) e de mioglobina no sangue venoso e de lactatos no sangue arterial nas 48 horas que se seguiram à admissão do doente. A apresentação clínica, a etiologia, o nível de oclusão, o procedimento cirúrgico e o resultado vascular final foram avaliados. Os endpoints primários foram a sobrevida global e amputação major e o endpoint secundário foi insuficiência renal aguda.

RESULTADOS: Foram incluídos 56 doentes (idade média 70.6 anos, 70% homens, 71% casos de isquemia aguda de membro inferior) neste estudo. À admissão, a gravidade da isquemia segundo a classificação de Rutherford, apresentou correlação estatisticamente significativa com o aumento de CK (p=0.002), de mioglobina (p=0.034) e lactato (p=0.015). Observou-se uma tendência para lesão renal aguda com mioglobinemias superiores (p=0.057). A sobrevida a 1 ano foi inferior nos doentes com elevação de lactato (p<0.001). A taxa de amputação durante o internamento foi superior em doentes com lactatos elevados à admissão (p=0.009). Não se verificou uma associação estatisticamente significativa entra a sobrevida global e a elevação de CK e mioglobina (p=0.378; p=0.300), apesar das curvas Kaplan-Meier sugerirem uma menor sobrevida nos doentes com CK e mioglobina elevados. Apesar das curvas Kaplan-Meier sugerirem uma taxa de amputação major superior nos doentes com elevação de CK e mioglobina, esta associação não foi estatisticamente significativa (p=0.257; p=0.528).

CONCLUSÃO: A isquemia de membro clinicamente mais grave apresenta parâmetros analíticos de rabdomiólise superiores, o que se pode relacionar com a maior incidência de lesão renal aguda após revascularização. No entanto, este estudo não demonstrou uma associação categórica dos parâmetros de rabdomiólise com o pior prognóstico vital ou de membro. A elevação perioperatória de lactato está associada a menor sobrevida e a taxas de amputação major superiores.

CR 09

Tratamento médico otimizado e a importância da sua adesão na doença carotídea – uma revisão narrativa

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INTRODUÇÃO: O AVC é uma doença muito comum na população europeia e com altas taxas de morbimortalidade, sendo uma das suas principais causas a estenose da artéria carótida interna. Os principais fatores de risco para a estenose carotídea são o tabagismo, hipertensão, hipercolestrolemia, obesidade, diabetes mellitus, sedentarismo, abuso de álcool e uma dieta desadequada. A má adesão às terapêuticas implementadas é uma das principais limitações ao sucesso do tratamento médico.

OBJETIVOS: Definir o atual conceito de tratamento médico otimizado em doentes com estenose carotídea; estudar a adesão terapêutica ao tratamento médico nestes doentes, assim como os fatores que a influenciam e as estratégias que a melhoram; e identificar possíveis necessidades investigacionais nessa área.

MÉTODOS: Foi efetuada uma pesquisa nas bases de dados PubMed e Cochrane, usando a query: ((best medical treatment) OR (tertiary prevention) OR (secondary prevention) OR (prevention)) AND ((adherence) OR (compliance) OR (adhesion)) AND (carotid stenosis). Foi também efetuada uma análise de referências de relevo. Elegeram-se os artigos que abordassem a terapêutica médica otimizada na doença carotídea extracraniana assintomática ou sintomática. Selecionamos os que analisassem a adesão terapêutica e o seu cumprimento. Um total de 31 artigos científicos foram considerados para esta revisão.

RESULTADOS: O tratamento médico na doença carotídea evoluiu nos últimos anos, o que se traduziu em diminuição das taxas de eventos cerebrovasculares. Desta forma, todos os doentes com estenose da artéria carótida beneficiam de tratamento farmacológico com estatina e antiagregante plaquetário, de um bom controlo tensional e glicémico, assim como de um estilo de vida saudável. Isto é particularmente verdade em doentes com história de eventos cerebrovasculares, com maior risco de recorrência. As razões para a fraca adesão terapêutica são normalmente multifatoriais, e podem ser intencionais ou não intencionais. Algumas das razões identificadas para a diminuição da adesão terapêutica neste contexto foram: esquecimento, alterações cognitivas, posologias complexas, falta de um método de monitorização clínico ou laboratorial que mostre a eficácia de alguns tratamentos e a falsa "sensação de segurança" em doentes submetidos a intervenção para estenose carotídea. Condições cardiovasculares crónicas (superior a 6 meses) estão associadas ao declínio progressivo da adesão, nomeadamente quando comparadas com o evento clínico agudo inicial. As técnicas identificadas para otimização da adesão terapêutica nesta patologia foram: o contacto constante com os doentes, a individualização do tratamento, a educação para a doença e para a medicação instituída e a visualização de placas ateroscleróticas pelos doentes nos estudos ecográficos. Outras foram sugeridas.

CONCLUSÃO: Embora não seja uma tarefa simples, é fundamental compreender o que leva os doentes a abandonar o tratamento médico no contexto da patologia carotídea/ AVC, assim como desenvolver mecanismos que potenciem a sua adesão. São fundamentais estudos prospetivos nesta área, nomeadamente em doentes sintomáticos, que avaliem a adesão terapêutica antes e após as intervenções cirúrgicas (stent ou endarterectomia) de forma a avaliar se há algum método com maior impacto em termos de adesão terapêutica médica, particularmente quando comparadas com doentes submetidos a tratamento médico conservador.

CR 10
Multidisciplinary approach to tavr pathway choice

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CHVNG/E

The transfemoral (TF) pathway has become the gold standard for transcatheter aortic valve replacement (TAVR) however, significant peripheral vascular disease are amongst anatomical challenges that render the iliofemoral pathway unfeasible. Up to 15% of patients are ineligible to the TF approach.

Alternative TAVR approaches offer the possibility of valve replacement in patients ineligible to the transfemoral route.

We present three cases of alternative TAVR approaches.

All three patients had severe iliofemoral disease so that the TF approach was deemed inappropriate.

Two patients were submitted to TAVR using the left common carotid artery (CCA) after established patency of both carotid and vertebral arteries using doppler ultrasound. Surgical approach of left CCA was preformed and cerebral perfusion was tested using INVOSTM system after a 3-minute clamping of the left CCA. TAVR was performed using a Medtronic® Evolut R 34mm in one patient and an Edwards ® Evolut Sapien3 26mm in the other. No complications were registered during the procedure and both patients remain asymptomatic at 6-month follow-up.

One other patient was submitted to TAVR using a subclavian access. The decision of this pathway was due to heavily calcified aortic arched that deemed the transcarotid approach unachievable. Due to obesity (which deemed the percutaneous approach impossible), a surgical approach was mad. TAVR was performed using a Medtronic® CoreValve evolut R 34mm. No complications were registered during the procedure.

There are several alternatives to the transfemoral approach: although the first developed, the transapical pathway is associated with a higher risk of complications.

Multiple studies attest the safety of the transcarotid approach, when compared to transfemoral. A thorough study of the carotid arteries is necessary as patients with a greater than 50% stenosis have a higher risk of embolization. A head CTA may be necessary to evaluate the circle of Willis patency to identify patients with the potential risk for cerebral hypoperfusion.

The transaxillary /trans-subclavian is another alternative pathway, although further research is needed regarding its safety. An important issue is the presence of a patent internal mammary artery graft being of the risk of its occlusion due to the sheath in the subclavian artery.

The optimal alternative access site for TAVR has not been elucidated yet, nonetheless, the transcarotid and transaxillary seem safe options with outcomes similar to those observed in transfemoral pathway.

CR 11
Aortitis: report of three cases of a rare life threatening entity

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CHVNG/E

INTRODUCTION: Aortitis is a rare but potentially risky disease. Given the non-specific presentation, a high clinical index of suspicion is necessary to detect the disease.

METHODS: Three patients were admitted to the emergency room (ER) with a contained symptomatic rupture due to suspected vasculitis, which required urgent treatment.
Clinical presentation was similar between patients, all of them referring recurrent lower back pain for several weeks that lead them to ER several times. They were submitted to extensive serologic workup, blood and urine cultures (negative). During hospital stay, patients were kept under broad antibiotics coverage and at the moment of discharge oral antibiotic therapy was prescribed.

Patient A was a 68 year old female with previous dyslipidemia and history of repeated urinary tract infections. She presented with one week evolution of fever and right lower back pain. Initial clinical suspicion was pyelonephritis but CTA scan revealed a retroperitoneal densification, infra-renal ulcer and saccular AAA that increased 1 cm in size in a week (45x55 mm). Patient B was a 66 year old male, with hypertension, dyslipidemia and active smoking. He presented to the ER with severe right hypochondrium pain. CTA showed aortic wall densification and apparent infra-renal aortic pseudoaneurysm (17x6mm). Due to increasing abdominal pain and fever, an endovascular exclusion of the pseudoaneurysm was performed with a 22x22x58 mm endograft preserving renal arteries, in both patients.

Patient C was a 76 year old male who presented to ER with recurrent back left pain and constipation. Medical history included active smoking, malaria and typhoid fever infections, and appendicectomy 30 years before. CTA scan revealed a rapidly increasing in size ulcer and aortic rupture at the level of the celiac trunk (CT). A hybrid off-the-shelf solution was performed with open surgical revascularization of the superior mesenteric and left renal arteries with silver impregnated bifurcated Dacron bypass (14x7 mm), originated from the distal right common iliac artery, followed by endovascular exclusion of the pseudoaneurysm with a stent-graft (28x28x49 mm) that was previously back-table surgeon-modified to perform a fenestration for the right renal artery. Additionally a parallel graft to the CT and right polar renal artery microcoil embolization was performed.

CONCLUSIONS: Aortitis is an inflammation of the aortic wall. The classification includes underlying rheumatologic and infectious diseases. In most cases of bacterial aortitis, a segment of the aortic wall with preexisting pathology (atherosclerotic plaque, aneurysm sac) is seeded by bacteria via vasa vasorum. The underlying aggressive evolution in such short period of time is similar in all three cases, which favors an infectious etiology. We hypothesize there is a relation between the higher rate of abdominal organ-related infections and a predilection to aortitis in the abdominal aorta instead of other locations. Endovascular repair has been adopted for the treatment of some infectious aortic pathologies. Although the stent graft is deployed in an infected field without resection of the infected nidus, it appears to be associated with superior short term survival, without late disadvantages, compared with open surgery. Antibiotic treatment appears to be beneficial for 6-12 months post-operatively, irrespective of the surgical approach, and in some cases lifelong.

CR 12

Acute mesenteric ischemic: what do we have and what can we do better

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INTRODUCTION: Acute mesenteric ischemia (AMI) is generally thought to be a rare disease, but in fact, in patients over 75 years of age it is a more common cause of acute abdomen than other frequent causes such as appendicitis or diverticulitis

Due to the difficulty of diagnosis and the rapid progression, the condition is life-threatening if not identified and treated early, with high associated mortality rate of 60-80 percent. In occlusive AMI, surgical treatment without revascularization is associated with as high as 80% overall mortality

It has been shown that early diagnosis with contrast-enhanced computed tomography and revascularization can reduce the overall mortality in AMI by up to 50%

Interprofessional teams by maintaining a high index of suspicion for this condition and diagnosing and treating it early, can prevent some of the associated mortality and decrease associated morbidity

The aim of our study was to evaluate clinical, laboratory and imagiologic findings at admission and identify variables associated with adverse outcome with the final purpose of supporting treatment decision

METHODS AND MATHERIAL: Retrospective review of a cohort of patients with acute mesenteric ischemia admitted at the emergency department at single tertiary referral center (Centro Hospitalar Vila Nova de Gaia Espinho - CHVNG/E) from 2017 to 2021

Were included only patients with arterial occlusive AMI (caused by a thrombotic or embolic arterial occlusion)

Patients were identified from electronic patient records by conducting a search for the International Classification of Diseases 10 or 9 codes K55011; K55012; K55019; and by case-by-case analysis of patients registered in the general surgery and vascular surgery operating room in the same period

Were analysed demographics variables, medical comorbidities, clinical presentation, radiologic findings, operative and postoperative follow up data

Primary end point was postoperative 30 days and 2 years mortality

Statistical analysis was performed using the SPSS

RESULTS: Table 1,2,3

CONCLUSION: AMI is a life-threatening disorder and is very difficult to diagnose. The disorder is best managed by an interprofessional team that includes a radiologist, general surgeon, vascular surgeon and intensivist.

In our serie, the results show that leukocytosis, creatinine levels, type of revascularization and performing or not laparostomy are significantly different between alive and death groups, at 30 days (p=0.038, p=0.012, p= 0.024, p= 0.018, respectively). The other variables in study doesn't seem to differ significantly between the two groups, at 30-day or 2-years period. [Table 3]

Although we didn´t found this in our study, probably because we have a reduced number of patients, timing-based management protocols that emphasize routine evaluation by a vascular surgeon and early, definitive mesenteric revascularization should be established and widely adopted for all patients with clinically suspected AMI at presentation.

Endovascular treatment has altered the management of AMI, and it may be adopted in selected patients who are not at risk for bowel necrosis. Avoidance of bowel necrosis patients and close monitoring for bowel necrosis are important. In our serie, the total length of stay seems to differ significantly with the type of revascularization (open with median 9.5 (iqr 17.5), endovascular with median 29 (iqr 49.5), p=0.043).

Table 1 - Baseline demographics and clinical presentation of patients with AMI by timing of

	All (n=48)	
Age* *median (IQR)*	79 (15)	
Sex* *n (%)*		
Female	32	(66.7)
Male	16	(33.3)
Comorbidities *n (%)*		
Auricular Fibrilhation	19	(44.2)
Cardiovascular risk factors	37	(86.0)
Valvular cardiopaty	13	(30.2)
Ischemic cardiopaty	4	(9.3)
Chronic kidney injury	3	(7.0)
Stroke	6	(14.0)
Peripheral arterial occlusive disease	7	(16.3)
Aortic thrombus	2	(4.7
Symptoms* *n (%)*		
Abdominal pain	39	(92.9)
Vomit	25	(59.5)
Diarrhea	16	(38.1)
Hematochezia	5	(11.9)
Physical examination findings* *n (%)*		
Signals of peritoneal irritation	6	(13.3)
Laboratorial findings*		
Hemoglobin *median (IQR)*	12.95 (2.9)	
Leucocitosis *median (IQR)*	14000 (9500)	
Creatinine *mean ± SD*	1.248 ± 0.56329	
Lactates *median (IQR)*	2.6 (3.55)	
Angio-CT (artery affected) *n (%)*		
SMA	29	(87.88)
CA	1	(3.03)
SMA+CA	3	(9.09)
Etiology* *n (%)*		
Embolic	23	(47.9)
Trombosis	9	(18.8)
Unknown	16	(33.3)
Time evolution before arrive at emergency department (hours) *median (IQR)*	12 (19)	
Time evolution between arrive at emergency department and treatment (hours) *median (IQR)*	9 (10)	

mesenteric revascularization.

Table 2 - Operative details and postoperative outcomes for patients with AMI by timing of mesenteric revascularization.

	All (n=48)	
Revascularization* *n (%)*		
Yes	21	(45.6)
No	25	(54.4)
Type of revascularization *n (%)*		
Open surgery	14	(66.7)
Endovascular surgery	7	(33.3)
Explorer laparotomy* *n (%)*		
Yes	28	(86.4)
No	6	(13.6)
Intestinal ressection *n (%)*		
No intestinal ressection	23	(25)
Intestinal ressection and second look	12	(42.9)
Intestinal ressection and imediate anastomosis	9	(32.1)
Localization of intestinal ressection *n (%)*		
Small intestine	10	(58.8)
Small intestine + Colon	5	(29.4)
Colon	5	(11.8)
Lenght of small intestine resected *median (IQR)*	160	330
ICU length of stay (days) *median (IQR)*	3 (4)	
Total length of stay *median (IQR)*	11(13)	
Vascular Patency *n (%)*	5	(11.9)
Oclusion first 48h	2	
Oclusion 48h-3M	0	
Oclusion > 3M	1	
30 days mortality* *n (%)*	29	(60.4)
2 years mortality* *n (%)*	30	(69.8)

Table 3 – Bivariate analysis to compare the characteristics of the groups "alive" and "death" at 30 days and 2 years

	All (n=48)		Alive (at 30 days)	Death (at 30 days)	p-value	Alive (at 2 years)	Death (at 2 years)	p-value
Age *median (IQR)*	79 (15)				**0.121**			**0.289**
Sex *n (%)*					**0.404**			**1**
Female	32	(66.7)						
Male	16	(33.3)						
Analysis								
Hemoglobin *median (IQR)*	12.95 (2.9)				**0.501**			**0.550**
Leucocitosis *median (IQR)*	14000 (9500)		12200 (7200)	15260 (12700)	**0.088***	12200 (7200)	15260 (12700)	**0.041***
Creatinine *mean ± SD*	1.248 ± 0.56329		0.9869 ± 0.43677	1.5218 ± 0.5935	**0.012***	0.8475 ± 0.33	1.5218 ± 0.5935	**0.005***
Lactatos *median (IQR)*	2.6 (3.55)				**0.867**			**0.481**
Time evolution before arrive at emergency department (hours) *median (IQR)*	12 (19)				**0.273**			**0.646**
Time evolution between arrive at emergency department and treatment (hours) *median (IQR)*	9 (10)				**0.550**			**0.656**
Revascularization *n (%)*					**0.280**			**1**
Yes	21	(45.6)						
No	25	(54.4)						
Type of Revascularization *n (%)*	2	(4.4)			**0.024***			**0.528**
Open surgery	14	(66.7)	4 (40)	10 (90.9)				
Endovascular surgery	7	(33.3)	6 (60)	1 (9.1)				
Explorer laparotomy *n (%)*					**0.018***			**0.452**
Yes	28	(86.4)	11 (68.8)	27 (96.4)				
No	6	(13.6)	5 (31.3)	1 (3.6)				
Intestinal ressection *n (%)*					**0.592**			**0.157**
No intestinal ressection	23							
Intestinal ressection and second look	12	(42.9)						
Intestinal ressection and imediate anastomosis	9	(32.1)						
Length of small intestine resected *median (IQR)*	160 (330)				**0.288**			**0.141**
ICU length of stay (days) *median (IQR)*	3 (4)				**0.572**			**0.786**
Total length of stay *median (IQR)*	11 (13)		16 (24)	2 (6.5)	**< 0.001***	16 (17)	3 (8.5)	**0.008***

CR 13

Thoracic endovascular repair for subacute and chronic type B aortic dissection – single center experience and medium-term follow-up

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INTRODUCTION: TEVAR (thoracic endovascular aortic repair) has emerged as an alternative to open aortic repair in the treatment of subacute and chronic type B aortic dissection, in an effort to improve aortic remodeling, with reported good early outcomes and low morbidity and mortality.

METHODS: This is a single center, retrospective, cohort study. All patients treated in our center with TEVAR for subacute or chronic type B aortic dissection, with or without adjunct procedures, between 2005 and 2021, were included in this analysis. Survival, major complications, reinterventions, and aortic remodeling were analyzed.

RESULTS: A total of eleven patients were identified. Eight were male, with a mean age of 62,3 years. Eight patients presented with chronic type B aortic dissection, and six patients (55%) had DeBakey type IIIB dissection. Three patients had a history of type A aortic dissection open repair, and one patient had previous abdominal aortic surgery for aneurysmatic disease. Indications for treatment were intact (n=9) and ruptured post-dissection aneurysm (n=2). Mean thoracic aortic diameter was 52,9mm, and false lumen was patent in eight patients, the remainder having partial false lumen thrombosis. Procedures included standard TEVAR (n=7), scalloped TEVAR (n=2), chimney TEVAR (n=1) and TEVAR with parallel graft (n=1). Median clinical and radiological follow-up was 14 months, with 64% survival. Two patients (18%) died during initial admission, and three deaths occurred during follow-up, with two aortic-related. At 30-days, one patient suffered a stroke, and one patient was re-admitted for persistent thoracic pain. Five patients suffered reinterventions, with one patient submitted to distal stent graft extension during initial admission and four patients undergoing reinterventions after initial discharge. Mean time to reintervention was 12 months, most commonly distal stent graft extension.

DISCUSSION: TEVAR is a safe strategy for subacute and chronic type B aortic dissection. However, reinterventions are common, and follow-up of these patients is essential.

CR 14

Abordagem em dois tempos aos falsos aneurismas infeciosos: adiar ou prevenir um desastre?

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INTRODUÇÃO: A rotura de um falso aneurisma infecioso é uma situação ameaçadora do membro e da vida. Se por um lado é essencial um controlo emergente do quadro, uma estratégia que garanta resultados a longo prazo torna-se fundamental. Este trabalho tem como objetivo relatar a estratégia de abordagem em duas fases adotado pelo nosso centro e respetivos resultados.

MÉTODOS: Foi realizada uma análise retrospetiva dos falsos aneurismas de etiologia infeciosa admitidos de forma emergente por rotura entre Janeiro de 2021 e Janeiro de 2022.

RESULTADOS: Foram admitidos 3 doentes com falso aneurisma roto, dois da artéria femoral comum em doentes toxicómanos e um da artéria ilíaca externa após enxertectomia de rim transplantado complicada com infeção da loca cirúrgica. Em todos os casos foi conseguida uma exclusão do falso aneurisma com endoprótese recoberta com controlo do quadro agudo. Um doente acabou por falecer após descompensação das patologias de base pelo quadro sético. Os restantes foram submetidos a pontagem extra-anatómica e explante da endoprótese num segundo tempo. Num doente foi contruída uma pontagem entre a ilíaca externa e a femoral superficial trans-obturador, que acabou por sobreinfetar com necessidade de exérese 4 meses depois. Não foi realizado nenhum procedimento de revascularização adicional e o doente permaneceu estável sem desenvolver isquemia ameaçadora do membro. O terceiro doente foi submetido a pontagem femoro-femoral cruzada eletiva, que mantém patente aos 4 meses de pós-operatório. Os esquemas de antibiótico foram dirigidos por antibiograma e mantidos por pelo menos 8 semanas.

CONCLUSÕES: Uma abordagem em dois tempos, através da exclusão do falso aneurisma com endoprótese recoberta para posterior revascularização por via extra-anatómica, evitando assim o circuito infetado, pode ser uma alternativa. Esta curta série mostra que é possível um controlo rápido e adequado por via endovascular na fase aguda, como tratamento de ponte para posterior reconstrução vascular.

CR 15

Treatment of access related hand ischemia – all autologous surgery

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INTRODUCTION: Vascular access related hand ischemia is a major and serious complication of vascular access for dialysis.

Distal revascularization and interval ligation (DRIL) is an effective approach to the management of access related ischemia that offers both symptom relief and access salvage.

The surgery can be done using either saphenous vein or PTFE prosthesis. The use of the saphenous vein is associated with less infection rate and longer patency, but requires general anaesthesia and is more invasive.

Hence, it is preferable to use an ipsilateral upper limb vein, which is less invasive and can be done under regional anaesthesia.

We report our experience of treating access related hand ischemia with DRIL, using the ipsilateral basilic vein.

Material e methods: We included 6 patients, 4 male and 2 female, with an average age of 62 years (from 58 to 76). All, but one, were diabetic. All patients had umero-cephalic av fistula and 3 patients had previous radio cephalic fistula. They presented with pain and finger or hand lesions (4 with ulcers and 2 with small necrosis areas) previous to undergoing surgery.

They were studied with ecodopler to confirm the steal phenomena and 3 also underwent angiography.

One patient was operated under general anaesthesia, while the others were operated with Supraclavicular Brachial Plexus Block.

We isolated the umeral artery proximal and distal to the anastomoses and then harvested the necessary length of the basilic vein. Afterwards, we dilated the vein with a saline solution and performed the distal anastomosis first. After the two anastomoses, we clamped distal to the av fistula but proximal to the distal anastomosis of the bypass and confirmed patency. Then, we ligated the artery in that site.

All patients saw their symptoms resolved, but one needed a finger amputation.

CONCLUSIONS: The basilic vein is a suitable conduit for DRIL revascularization whenever present because it has all the advantages of autologous material, allows for surgery under regional anaesthesia and can be harvested with the a single approach. This technique allows the preservation of the fistula and the reversion of ischemic symptoms.

CR 16
Isquemia aguda do membro inferior numa jovem politraumatizada

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INTRODUÇÃO: A isquemia aguda de membro é definida como uma diminuição súbita da perfusão, com ameaça da sua viabilidade. A incidência é de aproximadamente 1,5 casos por 10.000 pessoas/ano. O traumatismo de extremidade (contuso ou penetrante) pode cursar com isquemia aguda, por lesão arterial direta, secção ou dissecção, com trombose e embolização subsequentes. A isquemia aguda de membro pode ser revertida pela revascularização célere, mas todas as outras lesões de órgãos, lesões neurológicas, ósseas e tecidos moles, comprometem o resultado final.

CASO CLÍNICO: Doente do sexo feminino, 19 anos, politraumatizada, admitida na sala de emergência a 7/12/2021 após acidente de viação. Ao exame apresentava esfacelo grave da face anterior da coxa direita. Pulso femoral presente e pulsos poplíteo-distais ausentes. A TC toraco-abdominopélvica demonstrou rotura peritoneal da bexiga, fraturas extensas de ramos isquiopúbicos e trombose da artéria femoral comum direita. Submetida urgentemente a rafia da bexiga, bypass femoro-poplíteo direito com veia grande safena contralateral invertida e lavagem e encerramento parcial do esfacelo da coxa. Cerca de 4 horas após constatação de oclusão de bypass com re-intervenção: tromboembolectomia e fasciotomias de todos os compartimentos da coxa e perna direitas. Aplicação de Terapia de Pressão Negativa (TPN) com vacuoterapia isolada ou instilação associada. Internamento prolongado quer pela necessidade de algaliação pela laceração vesical, quer pelo alectuamento necessário para consolidação das fracturas de ramos isquiopúbicos. Realizou fisioterapia intensiva e precoce. Necessidade de múltiplos desbridamentos e lavagens das fasciotomias e do esfacelo, no leito e no bloco operatório. Permaneceu internada 6 semanas, com evolução muito favorável. Alta com o membro revascularizado, esfacelo da coxa em granulação, com limitação da dorsiflexão do pé, mantendo TPN e fisioterapia em ambulatório. Aos 4 meses de follow-up, está proposta para enxerto cutâneo da coxa. Caminha autonomamente sem auxiliares de marcha, com pulsos pedioso e tibial posterior.

CONCLUSÃO: A abordagem do doente politraumatizado requer equipas multidisciplinares comprometidas na sua recuperação plena. Neste caso, a intervenção de Cirurgia Vascular, Urologia, Ortopedia, Cirurgia Plástica, Fisiatria, Medicina Intensiva, Psiquiatria, Infecciologia, o apoio de enfermeiros, auxiliares e fisioterapeutas, permitiu não só a viabilidade do membro como, mais importante, a reabilitação funcional da doente.

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Renal artery disease: endovascular escape for imminent hemodialysis

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INTRODUCTION: Renal artery stenosis is an expression of various type of arterial disease, with potential for associated high morbidity. Atherosclerotic disease is the most common (up to 90%), and appears to affect up to 7% of the elderly population. It is associated with refractory hypertension, and it's increased burden of cardiovascular disease, as well as progressing loss of excretory function and risk of dialysis dependence, with elevated morbidity and healthcare costs. We describe a case of acute on chronic renal disease, associated to atherosclerotic disease of the renal arteries.

CLINICAL CASE DESCRIPTION: An 89 year old male, with heavy cardiovascular disease history and risk factors (arterial hypertension, type 2 diabetes mellitus, hipercholesterolemia, ischemic cardiopathy with previous surgical revascularization and consequent heart failure, and atrial fibrillation), was admitted in our center's Nephrology department in November 19th 2021 for acute on chronic renal failure (KIDGO 3) with rapid increase of serum creatinine in the course of four months (1.51mg/dL in June 2021 to 4.52mg/dL in October 2021). Upon entry, he presented a serum creatinine of 4,61mg/dL with rapid progression to a maximum of 5,77mg/dL, with no dialysis induction criteria. A complete etiologic study was conducted but no significant alterations were found in reno-vesical ultrasound, blood tests and infectious serologies and screenings for auto-immune or endocrinologic disorders were negative. In the thoraco-abdominal angio-CT, osteal pre-occlusive calcified stenosis of both renal arteries were found, with apparent hypoperfusion of the right kidney. Assuming renovascular cause for the deterioration of renal function, the patient was submitted, on December 07th, to percutaneous (femoral access) diagnostic arteriography, which showed a pre-occlusive stenosis of the origin of the left renal artery (LRA) and occlusive lesion of the ostium of the right renal artery (RRA), with a patent and long principal trunk beyond this occlusion. He was therefore submitted to, over 0.014mm guidewire, angioplasty with bare balloon expandable stent (Hippocampus®) 5x20mm of the LRA and recanalization and angioplasty with bare balloon expandable stent (Hippocampus®) 5x20mm of the RRA, with good angiographic result and very low dose of contrast administrated (85mL). Over the course of hospital stay, serum creatinine stabilized to 4.11 mg/dL, with no complications and no need for dialysis. And over follow-up, a recovery of renal function was observed, with a serum creatinine at four months post-procedure of 2,67mg/dL, and patency of both renal stents.

CONCLUSION: Atherosclerotic lesions of renal arteries may act in synergism with multiple causes of renal failure with serious burden of disease and lifelong need for dialysis. These lesions, however, including complete focal arterial occlusions may be treatable with short and low invasive procedures with potential for marked recovery of renal function.

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Thromboembolic risk in pregnant women with sars-cov-2 infection – a systematic review

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BACKGROUND: The infection by SARS-CoV-2 is associated to a thromboembolic complications risk theoretically increased. Pregnancy, isolated, is considered a pro-thrombotic state.

OBJECTIVES: This systematic review has as main goal the evaluation of the thromboembolic risk in pregnant women with COVID-19 disease, namely for pulmonary embolism (PE) and deep vein thrombosis (DVT). The secondary goal is the evaluation of the need for thromboprophylaxis in these cases.

METHODS: Three databases - PubMed, Scopus and Web of Science – were searched on October 2021, using the following Mesh terms and keywords: "(covid-19 OR SARS-CoV-2 OR covid) AND (pregnancy) AND (coagulopathy OR blood coagulation disorders OR thrombotic complications OR thromboembolic risk OR venous thromboembolism OR venous thrombosis)". Information about thrombotic complications in pregnancy and thromboprophylaxis was collected, by two independent reviewers.

RESULTS: 12 articles were analyzed, corresponding to 18205 pregnant women with SARS- CoV-2 infection. A total of 85 cases of thromboembolic events were diagnosed (0.47%, 95% CI 0.37-0.58%), of which only 17 reported the use of thromboprophylaxis (20.00%, 95% CI 12.10-30.08%). There were 3 deaths due to thromboembolic complications (3.53%, 95% CI 0.73-9.97%).

CONCLUSION: In pregnant women, the SARS-CoV-2 infection increases the risk of thromboembolic complications. However, the risk is not greater than in the general population. It is recommended thromboprophylaxis with low molecular weight heparin for hospitalized pregnant women, and in groups with moderate to high thromboembolic risk at home self-isolation.