PET/CT examination was performed and its results were evaluated by both qualitative scoring, on a 5-grade scale from 0 (no uptake) to 4 (clearly higher than liver uptake), and analysis of the standardised uptake value (SUV max and mean) in a ROI placed on the deltoid, biceps, gluteus and quadriceps muscles. A ROI of the joints and bursae was also designed and the SUV calculated. The muscle ROIs were positioned distant from the corresponding joints to avoid interference from possible articular or periarticular uptake. Demographic, clinical and laboratory data were collected.

Results: PMR patients showed an uptake higher than that of controls in the deltoid ($p=0.0004$), gluteus ($p=0.015$), and quadriceps ($p=0.009$), but not in the biceps ($p=0.06$) muscles. The semiquantitative SUV evaluation was consistent for the deltoid (SUV mean, $p=0.047$) and gluteus (SUV mean, $p=0.01$; SUV max, $p=0.006$) muscles. There was no correlation between muscle uptake and that of the adjoining joint. Similarly, no correlation was found between muscle uptake and demographic, clinical and laboratory (CRP, ESR) findings.

Conclusions: PMR show muscular inflammation at FDG-PET/CT, which does not derive from the nearby joints or periarticular tissues. A clearly defined myositis is not probable, because creatine kinase concentrations are normal in PMR. However, muscle inflammation may contribute to the global inflammatory burden and symptoms of patients with PMR.

Disclosure of Interest: None declared

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THU0455 AGE IS MORE CLOSELY ASSOCIATED WITH POSITIVE TEMPORAL ARTERY BIOPSY OVER BIOPSY LENGTH IN LARGE VETERANS ADMINISTRATION DATABASE STUDY

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Background: Giant cell arteritis (GCA) is a granulomatous vasculitis with a predilection for older women. While American College of Rheumatology (ACR) diagnostic guidelines exist, temporal artery biopsy (TAB) remains an essential tool often used independently to substantiate long-term steroid use and/or immunosuppression. No consensus exists regarding the ideal length of biopsy to optimise pathological yield. The influence of demographic factors such as age, race, and gender on the yield of biopsies is not defined.

Objectives: To determine if length of TAB and patient's race, gender, or age at biopsy influenced TAB results using the Veteran's Administration (VA) national database.

Methods: Patients with a procedure code for TAB between 1999–2017 were queried through the VA national database. The biopsy length and result (positive, negative, or indeterminate) were recorded. Demographic information including subject age, gender, and race was also extracted. Logistic regression models were run using Stata to identify independent determinants of a positive TAB.

Results: 2136 biopsies have been randomly reviewed to date. The average length of TAB was 12.15 mm. TAB results were 9% positive, 89% negative, and 2% indeterminate. There was no statistically significant association between biopsy length and a positive result; however, when compared to the reference group (>10 mm– <15 mm), the odds ratio for positive results increased with specimen length >20 mm to 30 mm in length. Conversely, there was a trend towards negative biopsy results for samples <10 mm in length when compared to the reference length group. There was no correlation between TAB result and race or gender; however, age correlated with a positive biopsy which was statistically significant. None of the subjects <50 years of age had a positive TAB. Younger age groups (age categories 50–59 and 60–69) were less likely to have a positive TAB (OR of 0.32 CI 0.17–0.61 and OR 0.53 CI 0.38–0.74, respectively) when compared to the reference age group (age 70–79). Conversely, older populations aged 90 and above demonstrated a statistically significant increased likelihood of a positive biopsy result with an OR of 2.25, CI 1.05–4.85.

Conclusions: The incidence of positive TAB among patients with suspected temporal arteritis in the VA national database was surprisingly low. The effect of other factors, such as the referring specialty or pre-biopsy steroid use, on TAB result may be insightful in understanding the low yield. Age remains a helpful tool given its association with increased likelihood of a positive biopsy, and the decision to pursue TAB in patients <50 years old should be approached judiciously. Length of biopsy was not associated with a positive result; however, the trends we note suggest a biopsy between 10 mm and 25 mm could optimise the yield. Gender and race were not helpful predictors for biopsy yield in this population.

Disclosure of Interest: None declared

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THU0456 THE CLINICO-HISTOPATHOLOGICAL ALGORITHM FOR DIFFERENTIAL DIAGNOSIS OF BUEGER'S DISEASE, TAKAYASU ARTERITIS AND ATHEROSCLEROTIC OCCLUSIVE DISEASE

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Background: Arterial occlusive disease is a significant cause of the disability due to lower limbs amputations. In addition to atherosclerosis, systemic vasculitides can present with progressive critical limb ischemia and could be misdiagnosed as atherosclerotic occlusive disease.

Objectives: To investigate the pathological findings in vessels of the lower limbs amputated due to Takayasu arteritis (TAK), Buerger's disease (BD) in comparison to atherosclerotic occlusive disease (AOD) and diabetic angiopathy (DA). Additionally, to develop an algorithm for clinico-histopathological differential diagnosis.

Methods: The specimens of vessels segments were obtained from the nine anatomical levels of amputated lower extremities in 132 patients, of which 30 were with TAK, 42 with BD, 30 with AOD and 30 with DA.

Results: In cases of BD, the exudative-productive endo-mesoarteritis with intimal hyperplasia from stenosis to complete obliteration have been found in the lower leg and foot arteries. No morphological abnormalities were observed in proximal arteries above knee. The pathologic hallmark of BD was panphlebitis with intimal hyperplasia, most often in anterior and posterior tibial veins, vena dorsalis pedis and superficial vein. The most remarkable finding in cases of TAK was mesoarteritis and luminal narrowing due to the reactive intimal hyperplasia in proximal arterial segments. In approximately half of the cases, TAK was not diagnosed clinically and identified only based on the pathological examination. The most common incorrect clinical diagnosis was atherosclerotic occlusive disease. In seven cases of TAK, concomitant premature atherosclerosis of varying severity was observed. Interestingly, in our series of cases of TAK, males were most frequently affected. The correct clinical diagnosis of TAK was made in all females' cases. It seems to be a trend to miss the clinical diagnosis of TAK in men. In cases of AOD, pathological examination revealed stenotic atherosclerotic plaques occurred most prominently in the tunica intima of femoral and popliteal arteries. The most common morphologic features in cases of DA were media calcinosis and fibrous lipid plaques both distal and proximal arterial segments. The algorithm for clinico-histopathological differential diagnosis of TAK, BD, AOD and DA consists of the following: a) the best diagnostic performance can be obtained with four-five specimens of the magistral vessels from the proximal and distal parts of the amputated limb and the superficial vein at the level of the upper third of the shin; b) using routine and special staining techniques (H and E, Masson's trichrome stain for collagen fibres, Hart's elastin stain); c) analysis of the demographic and clinical data; d) interpretation of pathologic changes in vessels of the lower limbs; e) making a pathologic diagnosis.

Conclusions: The current findings could contribute to the improving the differential diagnosis of Takayasu arteritis, Buerger's disease, atherosclerotic occlusive disease and diabetic angiopathy.

Disclosure of Interest: None declared

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THU0457 INTERLEUKIN-6 EXPRESSION IN INFLAMED AND NON-INFLAMED TEMPORAL ARTERIES FROM PATIENTS WITH GIANT CELL ARTERITIS

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Objectives: To evaluate if interleukin-6 (IL-6) expression in the temporal artery biopsy (TAB) specimens may differentiate patients with giant cell arteritis (GCA) from those without.

Methods: 63 consecutive formalin-fixed, paraffin-embedded (FFPE) TABs performed between 2009 and 2012 from 32 patients with transmural biopsy-proven GCA, 8 patients with biopsy-negative GCA and 23 controls were retrieved. Demographic, clinical, and laboratory data at presentation and at each follow-up visit were collected. A pathologist reviewed all TABs. Immunohistochemistry was performed on 4 μ m FFPE tissue sections with a 1:400 dilution of rabbit polyclonal anti-human IL-6 antibody (NOVUS Biologicals Littleton, Co.) for 60' at 37°. Slides of TAB specimens were independently assessed by five readers. IL-6 expression was graded as 0 (absent), 1 (mild), 2 (moderate) and 3 (marked). Inter-reader differences were resolved by consensus. Anti-IL6 staining was considered positive if staining was grade 2 or 3, since grade 1 was faint, sometimes difficult to differentiate from background, and showed the least degree of agreement between readers.

Results: TAB specimens from patients with biopsy-proven GCA, biopsy-negative GCA and controls were positive for anti-IL-6 staining in 59%, 13% and 48% of cases, respectively, the difference between biopsy-proven and biopsy-negative GCA patients being significant ($p=0.04$). In non-inflamed TABs, IL-6 was mainly expressed by mesenchymal cells in media and intima layers, while in inflamed TABs IL-6 was mainly expressed by mononuclear inflammatory infiltrating cells. IL-6 grade 2–3 expression was observed in all 6 patients with visual loss compared to 25 (43.9%) of 57 patients without ($p=0.011$). Blindness was recorded in 2 patients with biopsy-proven GCA and 4 controls (all with a final diagnosis of non-arteritic ischaemic optic neuropathy). No associations were found between IL-6 expression and demographic characteristics, GCA signs/symptoms, laboratory and histopathological TAB findings. However, there was a statistical trend ($p=0.055$) of increased frequency of the halo sign at temporal artery CDS in patients with IL-6 expression grade 2–3 compared to those with IL-6 expression grade 0–1. No significant differences for the expression of IL-6 were observed between patients with and without PMR (5/8%–62.5% - versus 6/15%–40% -, $p=0.400$) and between patients with isolated PMR and those with TAB positive GCA (62.5% vs 59%, $p=1.000$).

Conclusions: Our study provides evidence that IL-6 expression does not increase the sensitivity of TAB in patients with morphologically uninfamed arteries. A search for further markers that may increase the sensitivity of TAB is warranted.

Disclosure of Interest: None declared

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THU0458 INVESTIGATION OF THE ROLE OF M-TOR PATHWAY IN KIDNEY NEEDLE BIOPSIES OF PATIENTS WITH ANTINEUTROPHIL CYTOPLASMIC AUTOANTIBODY-ASSOCIATED VASCULITIS

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Background: Anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV) frequently affect the kidneys and renal involvement is an important factor regarding morbidity and mortality. Kidney lesion in AAV is characterised by necrotizing and crescentic glomerulonephritis by little or no immune deposition, and hence it was called pauci-immune glomerulonephritis (PIGN). The underlying mechanisms in the formation or progression of crescent formation need further investigations. Mammalian target of rapamycin (mTOR) is a serine/threonine kinase and plays role in the regulation of cell growth and proliferation.

Objectives: We aimed to evaluate the role of mTOR, which might be a potential therapeutic target, in kidney biopsies of patients with AAV.

Methods: The patients diagnosed as PIGN at an outpatient nephrology clinics of a tertiary hospital, between May 2009 and June 2016, were retrospectively reviewed and those patients who had a renal biopsy before receiving an immunosuppressive treatment were included in the study. Renal biopsy specimens were immunohistochemically stained with antibodies of mTOR, phosphatase and tensin homolog (PTEN) and transforming growth factor- β (TGF- β) and scored by an experienced renal pathologist.

Results: In total 54 patients with AAV ([52%] female) were included in the study. Twenty-five (46%) patients were diagnosed as granulomatosis with polyangiitis, 6 (11%) patients as microscopic polyangiitis, 16 (30%) patients as renal-limited disease, one (2%) patient as eosinophilic granulomatosis with polyangiitis. Six (11%) patients with PIGN could not be classified definitely. According to the histopathologic examination; 22% of the biopsies were classified as focal, 33% crescentic, 22% mixed and 22% as sclerotic. The mTOR was expressed in substantial percentages of glomeruli of patients with PIGN. However we observed PTEN expression in all samples and mTOR in all tubulointerstitial areas. mTOR expression was found to be related with the presence of crescentic and sclerotic changes observed in glomeruli and the degree of fibrosis in interstitial areas. In our study serum creatinine level or response to treatment were not found to be associated with mTOR pathway expression

Conclusions: Our study showed that glomerular or interstitial expression of PI3K/Akt/mTOR pathway may play a role in the pathogenesis of PIGN and mTORC1 inhibitors might provide a viable alternative for this disease.

Disclosure of Interest: None declared

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THU0459 SURVIVAL OF BIOPSY PROVEN GIANT CELL ARTERITIS IN NORTHERN ITALY: CORRELATION WITH CLINICAL, LABORATORY AND HISTOPATHOLOGICAL FINDINGS

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Objectives: To correlate survival with clinical, laboratory and histopathological findings in a population based cohort of patients with biopsy-proven giant cell arteritis (GCA) living in the Reggio Emilia area during a 26 years period.

Methods: In this population-based study, all patients living in the Reggio Emilia area who underwent temporal artery biopsy (TAB) for suspected GCA from January 1, 1986 to December 31, 2012 were identified. A pathologist with expertise in vasculitis and blinded to clinical data and final diagnosis reviewed all TABs. Based on the localization of the inflammation, positive TABs were classified into 4 categories: small vessel vasculitis (SVV), with inflammation limited to small periadventitial vessels devoid of muscular coat; vasa vasorum vasculitis (VVV), with inflammation surrounding the adventitial vasa vasorum; inflammation limited to adventitia (ILA), with inflammation spreading from vasa vasorum to the adventitia without extension to the media; transmural inflammation (TMI), with external elastic lamina disruption and extension of the inflammation to the media. Histopathologic features evaluated were: the severity of inflammation and intimal hyperplasia, both graded on a semiquantitative scale (mild=1, moderate=2 severe=3), the presence of intraluminal acute thrombosis, calcifications, giant cells, fibrinoid necrosis and laminar necrosis. Information about clinical manifestations, laboratory findings, treatment and disease course were collected. Patients were followed from GCA diagnosis to death, migration or December 2013.

Results: 281 patients (206 female, 73.3%) with biopsy-proven GCA were identified in the study period. 120 patients (84 female, 70%) died during a median follow-up period of 96 (IQR 55, 143) months. At univariate analysis, the presence of polymyalgia rheumatica (PMR) (HR 0.54, 95% CI 0.37–0.79, $p=0.002$), higher level of haemoglobin (HR 0.84, 95% CI 0.74–0.96, $p=0.011$) at disease onset, long-term remission (HR 0.47, 95% CI 0.26–0.86, $p=0.015$) and ILA or VVV at TAB (HR 0.48, 95% CI 0.24–0.97, $p=0.041$) were associated with lower mortality, while the evidence of large vessel involvement at imaging studies performed at diagnosis was associated with increased mortality (HR 5.84, 95% CI 1.57–21.8, $p=0.009$). Multivariate analysis confirmed the association between lower mortality and PMR (HR 0.54, 95% CI 0.36–0.81, $p=0.003$), higher level of haemoglobin (HR 0.83, 95% CI 0.69–0.99, $p=0.049$) at disease onset, and ILA or VVV at TAB (HR 0.38, 95% CI 0.17–0.82, $p=0.014$), and between increased mortality and large vessel involvement at imaging studies performed at diagnosis (HR 5.31, 95% CI 1.39–20.26, $p=0.014$).

Conclusions: PMR at diagnosis and only adventitial inflammation at TAB seem to identify subsets of biopsy-proven GCA patients with more benign disease, while large vessel involvement at diagnosis a subset with reduced survival.

Disclosure of Interest: None declared

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THU0460 FULLY INTEGRATED 18F-FDG PET/MR IN LARGE VESSEL VASCULITIS

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Background: Positron emission tomography (PET) is a non-invasive imaging method that detects ¹⁸F-fluorodeoxyglucose (FDG) uptake in vessel's walls. Its simultaneous combination with magnetic resonance (MR) would offer not only a more detailed morphological analysis of the vessels but also a reduction of the radiation, simplifying the clinical workflow and being logistically easier for the patient.

Objectives: To evaluate, for the first time up to now, the usefulness of a fully integrated 18F-FDG PET/MR in a series of large vessels vasculitides (LVV) patients.

Methods: We performed a controlled non-randomised prospective study. Images were acquired on a fully integrated PET/MR scanner (Siemens Biograph mMR), consisting in a complete MR protocol and FDG-PET whole body imaging. We evaluated vessel's standard uptake value (SUV) maximum and wall thickness (WT), defined as the mean of 4 measures (at 12, 3, 6 and 9 o'clock) at the inferior margin of D5, D9, D12, L3 and at thickest point (max WT).