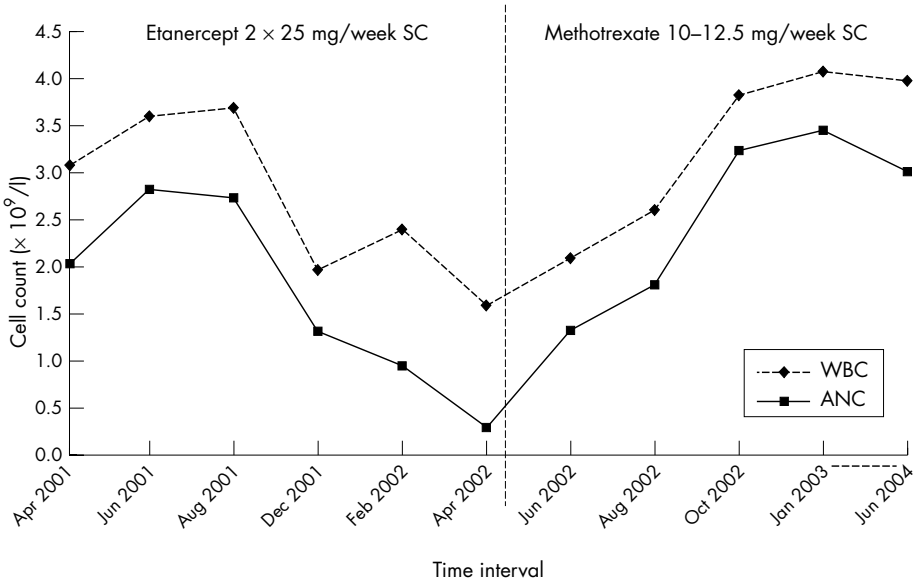


**Figure 1** After the introduction of etanercept, the white blood cells (WBC) and the absolute neutrophil count (ANC) decreased progressively to neutropenic levels. This was reversed by changing treatment to methotrexate.

this hypothesis. Finally, a lack of efficacy of etanercept in controlling FS must also be considered. This possibility is supported by a recent report on the lack of efficacy of etanercept on FS in a patient with RA and secondary amyloidosis.[8] At present, we call for caution when etanercept is used for patients with FS.

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# Positron emission tomography use in the diagnosis and follow up of Takayasu's arteritis

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Takayasu's arteritis (TA) is an uncommon chronic vasculitis of unknown origin that affects large and medium sized arteries, especially the aorta, its branches and pulmonary arteries.[1 2] TA may present as fever of unknown origin (FUO),[3] and inflammatory cells have been shown to take up [$^{18}$F]fluorodeoxyglucose ([$^{18}$F]FDG) avidly.[4–6]

## CASE REPORTS

### Patient 1

A 27 year old woman was admitted for FUO, headache, and interscapular pain, radiating to the neck and shoulders in the past 2 months. Physical and vascular examinations were normal. Laboratory tests showed anaemia (haemoglobin 84 g/l) and a raised erythrocyte sedimentation rate (ESR 79 mm/1st h). Blood cultures, a Venereal Disease Research Laboratory (VDRL) test, and autoimmune serological findings were negative. Vascular magnetic resonance (VMR) was normal. [$^{18}$F]FDG positron emission tomography ([$^{18}$F]FDG-PET) showed hypermetabolism in the brachiocephalic trunk, left carotid artery, and thoracic aorta (fig 1A).

Treatment was started with methylprednisolone (1 mg/kg/day; 60 mg) and methotrexate (15 mg/week). The pain disappeared quickly after starting treatment. At 7 months of follow up the patient remained asymptomatic. Laboratory tests improved (haemoglobin 110 g/l; ESR 8 mm/1st h).

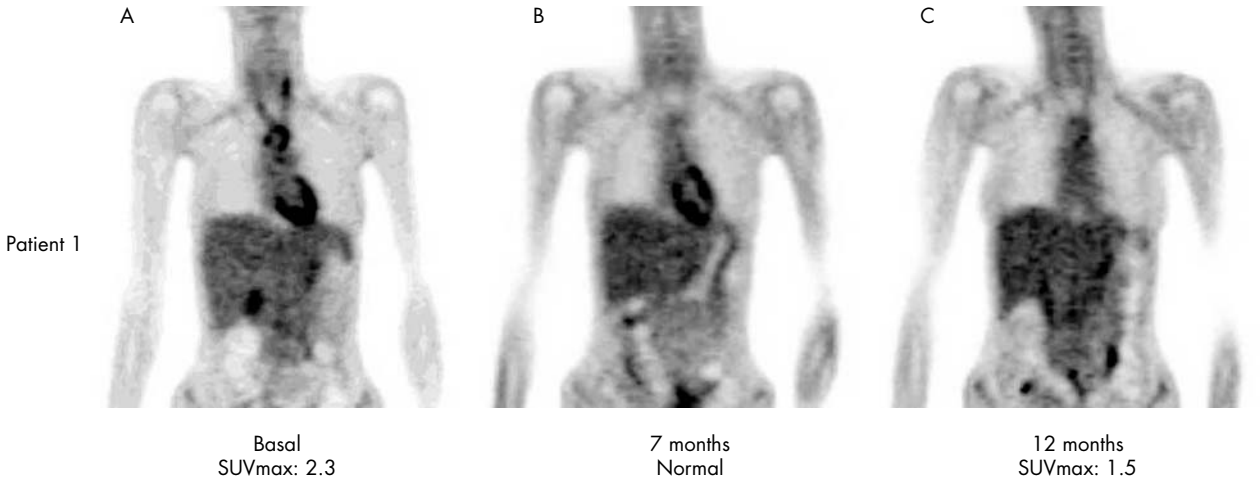
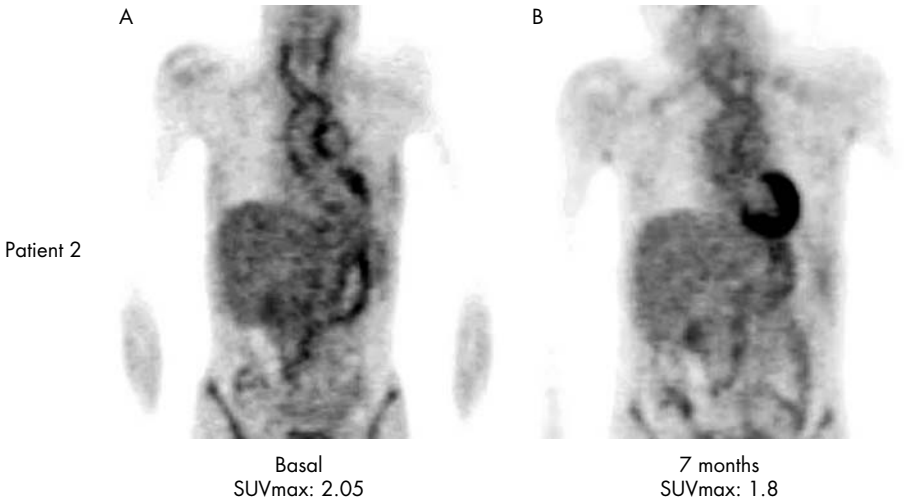



**Figure 1** (A) Hypermetabolism is detected in the brachiocephalic trunk, left carotid artery, and thoracic aorta. (B) Normal thoracic metabolism (unspecific bowel uptake can be seen in the abdominal area). (C) Hypermetabolism is detected in the aortic arch and the proximal third of both carotid arteries.




**Figures 2** (A and B) PET shows metabolism in the thoracic aorta, carotids, brachiocephalic trunk and pulmonary trunk.

[$^{18}$F]FDG metabolism was normal (fig 1B). When the methylprednisolone dose was reduced below 16 mg/day, the pain reappeared in the left cervical zone, upper chest, and back. The ESR was higher (16 mm/1st h) and [$^{18}$F]FDG-PET showed hypermetabolism again, matching the painful zones (fig 1C).

### Patient 2

A 21 year old woman presented with FUO within the past year and neck pain radiating to the left shoulder within the past month. Physical examination showed a thrill in the right supraclavicular fossa, but no bruits were detected. Upper limbs pulses were normal. Laboratory tests showed anaemia (haemoglobin 80 g/l) and a raised ESR (72 mm/1st h). Blood cultures, VDRL test, and autoimmune serological findings were negative. VMR was normal. [$^{18}$F]FDG-PET showed hypermetabolism in the thoracic aorta, carotids, brachiocephalic trunk, and pulmonary trunk (fig 2A).

Treatment was started with methylprednisolone (1 mg/kg/day; 60 mg) and methotrexate (15 mg/week), with fast clinical and biochemical response. At 4 months of follow up she remained asymptomatic, but radial pulse and blood pressure were undetectable in the left arm. Doppler ultrasonography showed brachial artery thrombosis with collateral neovasculature. Laboratory tests showed haemoglobin 110 g/l and ESR 11 mm/1st h. The dose of methylprednisolone was maintained at 30 mg/day. No other symptoms appeared until 3 months later, when methylprednisolone was reduced to 20 mg/day. She presented with upper thoracic pain and weakness in both arms. Haemoglobin was 111 g/l but ESR was 77 mm/1st h. [$^{18}$F]FDG-PET showed significant inflammatory activity (fig 2B).

## DISCUSSION

[$^{18}$F]FDG-PET has been shown to be a useful diagnostic tool in FUO[7] and in some types of vasculitis,[4 5] including TA.[6 8] It allows an early diagnosis of TA[8] during the inflammatory or "pre-pulseless" phase,[1 2] when other techniques such as VMR or arteriography may be normal. This point is crucial because the "pre-pulseless" phase will not fulfil the American College of Rheumatology criteria for TA, which are mostly based on advanced disease.[1] An early diagnosis allows early treatment and, theoretically, it might reduce the risk of complications.

Moreover, [$^{18}$F]FDG-PET can identify more vascular regions affected by the inflammatory process than VMR[5]

and quantify the inflammatory activity of the disease.[6] This is important, because 44% of patients in clinical remission have histologically proven inflammatory activity[1 2] and blood inflammatory markers are still limited.[9] In addition, [$^{18}$F]FDG-PET is useful in assessing the effectiveness of different treatments during follow up[6] and could be used in randomised controlled trials. However, [$^{18}$F]FDG-PET should be compared with more standardised techniques, such as angiography, VMR, computed tomography, or Doppler ultrasound to obtain firm support for its value in clinical practice.

The accuracy of [$^{18}$F]FDG-PET for diagnosing TA has been estimated as 94% and false positives are not found in normal patients aged under 40.[6] In our patients PET was the only technique with a positive result for diagnosing TA and showed good correlation with disease activity. Our experience also confirms previous reports of relapsing TA after tapering the corticoid dose,[2 9] even though methotrexate was started after diagnosis.

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# Interleukin (IL) 1α, IL1β, IL receptor antagonist, and IL10 polymorphisms in psoriatic arthritis

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Interleukin (IL) 1 is a potent proinflammatory cytokine that occurs as IL1α and IL1β. The biological activity of IL1α and IL1β is initiated by binding with type 1 IL1 receptor and is inhibited by IL1 receptor antagonist (ILRa).[1] IL10 is an anti-inflammatory cytokine that suppresses macrophage production of cytokines and enhances soluble cytokine receptor release.[2] These cytokines have been implicated in the pathogenesis of psoriatic arthritis (PsA), as increased expression of IL1 and IL10 has been observed in the synovial fluid and synovial membrane of patients with PsA in comparison with patients with osteoarthritis.[3] Given the proposed function of these cytokines in autoimmune disease, we set out to examine the role of polymorphisms in IL1α, IL1β, ILRa, and IL10 in the Newfoundland PsA population.

This study was approved by the ethics committee at the Memorial University of Newfoundland. In this study, PsA was defined as an inflammatory arthritis in patients with psoriasis and the absence of other causes for inflammatory arthritis. Patients and controls were genotyped for the following single nucleotide polymorphisms (SNPs): IL1α (−889; rs1143634), IL1β (+3953; rs1800587), and IL10 (−1082; rs1800896) using the Sequenom MassArray platform. All primers were designed using SpectroDESIGNER software. For ILRa (accession No AF387734), an 86 bp variable number tandem repeat was determined by a polymerase chain reaction.

Two hundred and twenty six patients with PsA and 95 matched controls were studied. The mean age of the patients with PsA was 54.0 years; 108 (48%) were women. All genotypes satisfied the Hardy-Weinberg equilibrium. $\chi^2$ Tests were used to examine the relationship between the minor allele frequencies of the candidate genes and PsA. The minor allele frequencies for patients with PsA and controls were for IL1α (T) 0.24 *v* 0.31 (odds ratio 0.7 (95% confidence interval 0.4 to 1.2)) respectively; for IL1β (T) 0.24 *v* 0.25 (0.9 (0.5 to 1.6)); for ILRa (two repeats) 0.27 *v* 0.24 (1.1 (0.7 to 2.0)); and for IL10 (A) 0.47 *v* 0.49 (0.9, (0.5 to 1.6)). Thus none of the polymorphisms examined were significantly associated with PsA in the Newfoundland population.

There is a paucity of association studies of IL1 and IL10 in PsA. In studies with an admixed white population Ravindran *et al* noted an increased frequency of the IL1α −889 polymorphism among patients with PsA but observed no difference for IL1β +3953 and IL1 receptor R1 +970 genes.[4] Another study demonstrated no association between IL1β +3953 and IL1Ra gene polymorphisms in patients with PsA nor with IL10 SNPs (−1082 and −592) and PsA.[5]

Newfoundland has a white founder population known to exhibit homogeneity comparable to that of the Hutterites.[6] A potential advantage in studying this population is the detection of small to modest genetic effects, as a result of an enhanced signal to noise ratio. In our study no association was found between polymorphisms in IL1α (−889), IL1β (+3953), IL10 (−1082), and ILRa in the Newfoundland founder population. Thus, these polymorphisms are unlikely to have a major role in the Newfoundland PsA population.