Evidence-based Rheumatology

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Ultrasonography of temporal arteries discloses temporal arteritis in "pure" polymyalgia rheumatica patients

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Title: Incidence of temporal arteritis in patients with polymyalgia rheumatica: a prospective study using color Doppler ultrasonography of the temporal arteries
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Aim

Polymyalgia rheumatica is a common condition, and the incidence of temporal arteritis (TA) in "pure" PMR patients (pts) is quite controversial. The diagnosis could be made by clinical findings and temporal artery biopsy. More recently, color doppler ultrasonography (US) of the temporal arteries was demonstrated to be a sensitive and specific tool for diagnosing TA (1). This evidence prompted the authors to conduct a color doppler US study of the temporal arteries in order to detect the incidence of TA in pts with PMR.

Methods

All 127 consecutive pts with newly diagnosed and active PMR, untreated or having received corticosteroids for < 7 days, were enrolled and submitted to color doppler US of the temporal arteries. All pts fullfilled at least 3/7 of the Bird criteria for PMR: bilateral shoulder pain or stiffness, duration of illness < 2 weeks, initial ESR >40 mm/h, duration of morning stiffness > 1 hour, age > 65 years, depression and/or weight loss and bilateral tenderness in the upper arms (2). Twenty-five out of 127 pts had clinical signs of TA (group A). After the final diagnosis had been established, they fulfilled at least 3 of the ACR criteria for giant cell arteritis (3). 102/127 pts presented "pure" PMR. Once color doppler US of the temporal arteries was performed, these pts were divided into two groups: those with US findings arousing suspicion of TA, i.e. the halo sign, stenosis or occlusion of the temporal arteries (group B: 8 pts) and those with normal US findings (group C: 94 pts). 127 age- and sex-matched controls, with no history of TA or PMR and who had never had a temporal artery biopsy, also underwent a color doppler US of temporal arteries (group D).

Simultaneous color doppler and duplex US were performed in the temporal arteries and the common superficial arteries, including the parietal and frontal ramus, on both sides, before performing a biopsy. The possible pathological findings were halo, occlusion and stenosis (1). Hypoechoic wall thickening (halo) presenting as a dark area around the perfused lumen and looking like a halo in a transverse plane is a specific finding of TA due to oedema. Occlusion of a temporal artery is shown on conventional grey-scale US as the wall of an artery with a dark area in the center. Color doppler US fails to show a color signal in this area, meaning that blood flow is not present. Stenosis is detected by color doppler US as a turbulent flow combined with increased persistent flow during diastole. By pulsed-wave doppler US, it is considered to be present if the blood flow velocity is more than twice the rate recorded in the area before the stenosis.

Twenty out of 25 pts in group A, all the pts in group B and 11/94 pts in group C underwent bilateral TA biopsy. Temporal arteritis was diagnosed if histology demonstrated vasculitis of the TA with a predominance of mononuclear cell infiltration or granulomatous inflammation with or without giant cells (3).

Results

In 22/25 pts of group A (pts with signs of PMR and TA) US revealed a halo, a stenosis or an occlusion, whereas in 3/25 pts arteries were normal in terms of US and histology. In 8/102 (8%) pts with clinically "pure" PMR, US reveal a pathological finding (group B). In 4/8 pts histology confirmed the diagnosis of TA (4%). In 3 out of the other 4 pts a halo, considered as a specific sign for TA, was seen. Ninety-four pts with clinically "pure" PMR (group C) had a normal US examination. In the 127 sex- and age-matched controls (group D) none had halo and only 4 presented stenosis or occlusion.

Conclusions

A considerable overlap between PMR and TA exists. While in the literature there is agreement in considering that 40-50% TA pts experience PMR, the incidence of TA in pts with PMR is controversial. Therefore the employment of US of the temporal arteries in pts with PMR is a safe and non-invasive method useful in clinical practice to diagnose concomitant TA and to determine the proper therapy.

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More information may be found in the following suggested readings

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Comment

A clear association between PMR and TA ranging from 40% to 60% of the cases has been reported. This association is less striking in patients primarily affected by PMR. In PMR clinical series there was a large range in the frequency of TA of between 0% to 80% (1). A population-based study from Olmsted County, Minnesota, USA demonstrated the presence of biopsy-proven GCA in 39 out of 245 (16%) patients with PMR (2). However, the frequency of TA in patients with PMR without cranial symptoms and signs is controversial and it has been reported with a wide variability ranging from 0% to 80% of the cases. Considering the importance of this association, which heavily influences the initial corticosteroid dose requirement and the prognosis, the availability of an accurate diagnostic method for the detection of "occult" TA is crucial.

Confirming their previous studies, in this paper Schmidt et al. found that colour doppler US examination may represent a useful method for the detection of silent TA in patient with PMR. US examination suggested TA in 8% of 102 patients with "pure" PMR. Temporal artery biopsy confirmed the suspicion in half of these patients.

US examination is a non-invasive diagnostic tool which may be a promising alternative to biopsy for the diagnosis of TA. However, the accuracy of this method should be more precisely assessed in terms of its sensitivity and specificity. Indeed, the study design and the selection of patients do not make it possible to draw definitive conclusions from this paper.

While not specified in the text, it seems that the authors assume colour doppler US examination of the temporal arteries as the gold standard for the diagnosis of TA. However, a positive temporal artery biopsy still remains the gold standard for the diagnosis of TA (3). In a recent study we performed colour doppler US and temporal artery biopsy in 86 patients with PMR. We found with colour doppler US that the presence of hypoechoic halo ≥ 1 mm has a good specificity for the diagnosis of TA (4). However, this method had a low sensitivity and it did not improve the diagnostic accuracy of a careful physical examination of the temporal arteries.

The results of Schmidt et al. also seem to indicate that the sensitivity and specificity of US is limited, considering that among the 8 patients with US findings suggestive of TA, only 4 had histological evidence of vasculitis. However, as pointed out in the paper, US examination may be useful to select patients for temporal artery biopsy. Nevertheless, on the basis of the available data, US cannot substitute for the physical examination and temporal artery biopsy for the diagnosis of TA.

Moreover, there are no data concerning the follow-up of the patients. The authors included in the study patients fulfilling Bird's criteria for the diagnosis of PMR, which had a good sensitivity (92%) and a rather low specificity (80%) for the diagnosis of PMR. In the absence of statistically validated classification/diagnostic criteria for PMR, the follow-up of patients and US or MRI shoulder examination (5) still represent the most important parametersto confirm the diagnosis of PMR.

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