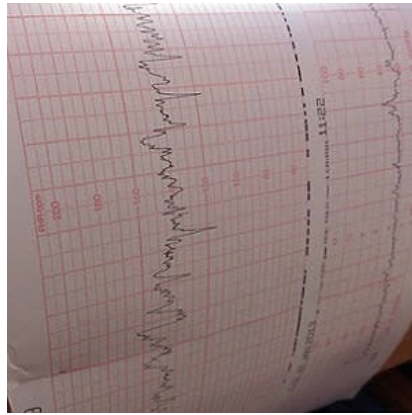




Doppler ultrasound in Raynaud phenomenon treatment monitoring



A new study finds that Doppler ultrasound can be used effectively to monitor Raynaud phenomenon (RP) treatment. Blood flow volume can be measured without cold provocation to facilitate follow-up care of patients with RP, according to the study published in the American Journal of Roentgenology.

"In patients with RP, Doppler ultrasound with or without cold provocation can be performed for diagnosis, and treatment response can be followed up objectively, cost-effectively, safely (no radiation involved), and easily. We believe that Doppler ultrasound will broaden horizons in the monitoring of RP treatment," say Dr. Ugur Toprak of the Department of Radiology, Eskisehir Osmangazi University Faculty of Medicine, Eskisehir, Turkey, and co-authors.

RP is a disease that affects one's blood vessels. White discoloration of the fingers is followed by cyanosis, pain, and numbness caused by cold and emotional stress. The diagnosis of RP is based on clinical manifestations. However, the classic triad may not be evident in all patients. Thus, many objective diagnostic methods – e.g., colour Doppler ultrasound, MR angiography, perfusion scintigraphy, laser speckle contrast imaging and thermography – have been used. Follow-up of treatment response has difficulties similar to those of diagnosis.

In their two previous studies, Dr. Toprak and colleagues found that colour Doppler ultrasound had high sensitivity and specificity in differentiating healthy individuals from individuals with primary RP and those with secondary RP. In this study, the researchers assessed the role of flow parameters and change from baseline after cold provocation obtained with dynamic Doppler ultrasound in the objective follow-up of response to treatment of RP. The study included 33 patients with newly diagnosed primary RP, 31 with secondary RP, and 26 healthy participants (control subjects). Both groups of patients with RP underwent sonography before and after treatment. The control group underwent sonography once. Baseline digital arterial diameter and flow volume were measured at room temperature. After cold provocation, diameter and flow volume were measured again, and flow starting time and flow normalising time were recorded. Data were measured as mean (\pm SD) values.

After treatment, the researchers observed the following:

- Baseline diameter did not significantly increase in either group (primary RP pretreatment, 0.79 ± 0.17 mm; posttreatment, 0.82 ± 0.19 mm; secondary RP pretreatment, 0.66 ± 0.13 mm; posttreatment, 0.68 ± 0.14 mm)
- Baseline flow volume increased significantly in both groups (primary RP pretreatment, 3.08 ± 2.96 mL/min; posttreatment, 3.91 ± 3.39 mL/min; secondary RP pretreatment, 2.14 ± 1.94 mL/min; posttreatment, $2.80 \pm$

2.15 mL/min)

- Cold provocation diameter increased significantly in both groups (primary RP pretreatment, 0.63 ± 0.15 mm; posttreatment, 0.70 ± 0.16 mm; secondary RP pretreatment, 0.56 ± 0.15 mm; posttreatment, 0.63 ± 0.13 mm)
- Cold provocation flow volume increased significantly in both groups (primary RP pretreatment, 1.18 ± 1.26 mL/min; posttreatment, 2.17 ± 2.16 mL/min; secondary RP pretreatment, 1.07 ± 1.40 mL/min; posttreatment, 1.46 ± 1.67 mL/min)
- There was no statistically significant increase in flow starting time in patients with primary RP, but there was a significant increase in patients with secondary RP (primary RP pretreatment, 1.15 ± 2.27 minutes; posttreatment, 0.61 ± 1.41 minutes; secondary RP pretreatment, 3.13 ± 4.81 minutes; posttreatment, 1.58 ± 2.36 minutes)
- Flow volume normalising time improved significantly in both groups (primary RP pretreatment, 7.24 ± 7.60 minutes; posttreatment, 3.84 ± 3.39 minutes; secondary RP pretreatment, 9.58 ± 8.49 minutes; posttreatment, 4.32 ± 3.56 minutes)

The research team notes that, among patients with primary RP, the posttreatment flow starting time was similar to that in the control group. Despite improvements, all remaining parameters differed in the treatment group compared with the control group.

That the examination included cold provocation can be seen as a limitation of this study, the team says. Another limitation was that the study was cross-sectional and the number of patients was small. "Other studies can be planned in which patients are still undergoing treatment but need a change of medication or additional medications," add the researchers.

Source: [American Journal of Roentgenology](#)

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