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Cystic Fibrosis Research News

Title:
Aquagenic wrinkling of the palms in cystic fibrosis patients treated with ivacaftor

Lay Title:
Wrinkling of the palms on exposure to water in cystic fibrosis patients treated with ivacaftor

Authors:
Eyal Jacobi[a], Melinda Solomon[a], Julie Avolio[a], Michelle Shaw[a], Tanja Gonska[b,c], Felix Ratjen[a,c], Hartmut Grasemann[a,c]

Affiliations:
[a] Division of Respiratory Medicine, Department of Pediatrics, The Hospital for Sick Children, University of Toronto, Toronto, Canada.
[b] Division of Gastroenterology, Department of Pediatrics, The Hospital for Sick Children, University of Toronto, Toronto, Canada.
[c] Translational Medicine, Research Institute, The Hospital for Sick Children, University of Toronto, Toronto, Canada.

What was your research question?
Aquagenic wrinkling of the palms (AWP), also known as hand-in-the-bucket sign, is a medical term used to describe excessive wrinkling of palms on exposure to water. AWP is more common in people living with CF compared to the general population. We asked the question of whether ivacaftor, a drug that can improve function of the cystic fibrosis transmembrane conductance regulator (CFTR) in people with CF, would also improve AWP.

Why is this important?
While AWP is common in people living with CF and has therefore been suggested as a potential screening tool for CF, it is unclear whether AWP is actually caused by CFTR deficiency. Changes in AWP severity in people treated with effective CFTR therapy such as ivacaftor, would provide further evidence that AWP is directly linked to CFTR dysfunction.

What did you do?
This study involved eight children and eight adults (total of 16) with CF. Participants were asked to soak their hands into a 37°C water bath for 5 minutes during regular clinic visits that were held before as well as one, three and six months after initiation of ivacaftor therapy. Severity of AWP was graded on a scale ranging from no wrinkling (score 0), mild - confined to

fingertip only (score 1), moderate – confined to fingers only (score 2), and severe/diffuse AWP - diffuse wrinkling of the palm with or without white plaques (score 3). Three physicians blinded to the identity of the patients scored the wrinkling of each palm independently and average scores were calculated for each visit.

What did you find?

Thirteen (81.3%) of the participants had at least mild AWP (average score ≥1), and eight (50%) had moderate to severe AWP (average score ≥1.67-3) at baseline, i.e. before ivacaftor therapy was started. At the six-month follow up on ivacaftor therapy, average AWP scores had decreased in the patients with at least mild wrinkling, and in those with moderate to severe AWP at baseline. The improvement in AWP scores over time was statistically significant. There was no relation of changes in AWP scores with sweat chloride levels or pulmonary function.

What does this mean and reasons for caution?

The CFTR-targeting drug ivacaftor results in improvement of AWP severity in some but not all treated CF patients. While these observations provided further evidence that AWP in people with CF may be related to CFTR dysfunction, it is also possible that other ivacaftor therapy-related effects such as improved nutritional status or inflammation may account for some of the observed changes over time.

What's next?

Further studies are needed to better understand the mechanisms that cause wrinkling of the palms on exposure to water in people living with cystic fibrosis.

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