Capecitabine and the Risk of Fingerprint Loss

Anticancer treatments are frequently accompanied by cutaneous adverse effects: capecitabine treatment induces hand-foot syndrome (HFS) in approximately 50% to 60% of patients, whereas hand-foot skin reaction (HFSR) has been reported in 19% to 34% of patients treated with the tyrosine kinase inhibitors (TKIs) sunitinib malate or sorafenib tosylate. Ultimately, these cutaneous adverse events are believed to result in the loss of fingerprints, which, to our knowledge, has been described anecdotally for patients treated with capecitabine and can cause serious identification problems. We assessed the association of HFS and HFSR with fingerprint quality.

Methods | This prospective cohort study was performed at the Erasmus MC Cancer Institute, Rotterdam, the Netherlands, and included 337 ten-fingerprint sets from 150 patients. The principal inclusion criterion was a planned daily treatment with capecitabine (as monotherapy or combination therapy) or a TKI. Previous treatment with these drugs was not allowed. Fingerprints were taken from all patients’ fingers using a digital fingerprint scanner (MorphoLivescan; Morpho) before treatment, within 6 to 10 weeks after the start of treatment, and after treatment discontinuation. At the same time, digital photographic images (Nikon Corporation) were made of the palms and fingers of patients to detect abnormalities that could affect the fingerprints. Three dactyloscopists and a detective from the Netherlands National Police Agency visually assessed fingerprints and images, respectively. The baseline fingerprints were compared with the fingerprints during treatment and were scored on the overall quality of friction ridge details and the suitability for individualization purposes. A 5-point scale was used on which slight improvement was scored as 1, no changes as 2, slightly decreased quality as 3, major loss of quality as 4, and total loss of fingerprint quality as 5. The scores were averaged, and, subsequently, these results were dichotomized to severe quality loss (score 4-5) or no severe changes in fingerprints (score 1-3). The severity levels of HFS and HFSR were graded according to the National Cancer Institute’s Common Terminology Criteria for Adverse Events version 4.03. Groups were compared using a χ² test. The institutional review board of the Erasmus MC Cancer Institute approved the study protocol, and written informed consent was obtained from all patients.

Results | Between July 5, 2013 and July 12, 2015, we recorded 337 ten-fingerprint sets with corresponding digital images from 150 patients. A total of 112 patients, predominantly having colorectal cancer (n = 49) or hepatocellular carcinoma (n = 31), provided fingerprints at baseline and during treatment, of which 66 patients were treated with capecitabine and 46 patients with the TKIs sorafenib (n = 30), pazopanib hydrochloride (n = 10), or sunitinib (n = 6). Within 8 weeks of treatment, severe quality loss of fingerprints (Figure) was noticed in 9 patients (14%) treated with capecitabine and in 1 patient (2%) treated with the TKI sunitinib. In addition, HFS and HFSR were observed in 46 patients (70%) treated with capecitabine and in 21 patients (46%) treated with TKIs. The grades for HFS and HFSR were not associated with the incidence of severe fingerprint quality loss (P = .43 and P = .41, respectively). Severe fingerprint quality loss recovered completely within 2 to 4 weeks after treatment discontinuation in all 3 patients who were able to provide posttreatment fingerprints.

Discussion | Severe fingerprint quality loss is a frequent adverse event during capecitabine treatment. We demonstrated that HFS is not associated with the loss of fingerprints, which seems to be reversible after treatment discontinuation. Still, the fingerprint loss may cause significant difficulties for patients in their daily lives because this adverse effect of capecitabine treatment has caused identification problems at state borders. Moreover, fingerprints are increasingly used for identification on personal electronic devices, such as smartphones and computer laptops. Although fingerprint loss has no clinical significance, physicians should be aware of its major consequences in the daily lives of the affected patients.

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Long-term Survival After Chemoradiotherapy Without Surgery for Rectal Adenocarcinoma: A Word of Caution

Early studies1-3 with small samples from specialized centers report success with nonoperative management (NOM) or the watch-and-wait approach after neoadjuvant chemoradiotherapy for rectal adenocarcinoma. However, it is unknown whether the results are generalizable to the broader population of patients with rectal cancer.1-5 Still, use of chemoradiotherapy without surgery has doubled among individuals with nonmetastatic rectal adenocarcinoma.6 The highest use is observed among those who typically have lower access to innovative care: black patients, uninsured or Medicaid insured patients, and individuals treated at low-volume centers.6 We suspected that this treatment approach in the community setting may often represent a disparity in appropriate care rather than an innovative and intentional treatment strategy. The outcomes for patients who receive chemoradiotherapy only outside a clinical trial are unknown. We hypothesized that this approach is associated with worse overall survival (OS).

Methods | The National Cancer Database, a hospital-based cancer registry, was used to identify incident cases of clinical stage II/III rectal adenocarcinoma from January 1, 2004, through December 31, 2008. The cohort was divided into 2 groups: chemoradiotherapy only and chemoradiotherapy plus proctectomy. To construct the cohort in such a way as to maximize the chance that patients in the chemoradiotherapy-only group would have been candidates for surgery, we restricted this group to only patients for whom it was reported that surgery was “not part of the planned first course of treatment.” We calculated OS in months from date of diagnosis to last contact or confirmed death.

We compared OS by treatment group using Kaplan-Meier survival curves and adjusted Cox proportional hazards models, controlling for patient, tumor, and facility characteristics. To account for immortal time bias, we excluded deaths that occurred in the year of diagnosis. The National Cancer Database analyses were each approved by and the need for informed consent waived by the University of North Carolina Institutional Review Board. All data were deidentified.

Results | Throughout the entire follow-up period, individuals receiving chemoradiotherapy only had poorer OS than those receiving chemoradiotherapy and proctectomy (hazard ratio, 1.90; 95% CI, 1.75-2.04) (Figure). These differences persisted after adjusting for race, insurance status, and other factors.