

Dramatic Changes in Oncology Care Pathways During the COVID-19 Pandemic: The French ONCOCARE-COV Study

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Disclosures of potential conflicts of interest may be found at the end of this article.

ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic may have affected cancer management. We aimed to evaluate changes in every oncology care pathway essential step, from screening to treatment, during the pandemic.

Monthly oncological activity differences between 2019 and 2020 (screening tests, histopathological analyzes, multidisciplinary tumor board meetings (MTBMs), diagnostic announcement procedures (DAPs), and treatments were calculated in two French areas experiencing different pandemic intensity (Reims and Colmar).

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic led to prioritizing emergency care dedicated to infection management. Other conditions, such as cancer management, may have been affected during the sanitary lockdown [1]. Consequences of this “distraction effect” are suspected, but the immediate impact of this pandemic is still unknown [2]. The ONCOCARE-COV study evaluated changes in oncological care pathways during the COVID-19 crisis.

MATERIALS AND METHODS

Monthly oncological activity indicators were extracted using electronic files and nation-wide procedure codes Classification commune des actes médicaux (CCAM) from January 1, 2019, to May 31, 2020, in a French area of high COVID-19 incidence (Grand East region), in a tertiary care center (University Hospital and Godinot Cancer Institute in Reims), and in a general hospital (in the first national outbreak epicenter in Colmar). The daily number of infected and deceased inpatients with COVID-19 and the monthly

COVID-19 has had a dramatic impact in terms of screening (–86% to –100%), diagnosis (–39%), and surgical treatment (–30%). This global decrease in all essential oncology care pathway steps contrasted with the relative stability of chemotherapy (–9%) and radiotherapy use (–16%). Outbreak occurred earlier and with more intensity in Colmar but had a comparable impact in both areas regarding MTBMs and DAPs.

The current ONCOCARE-COV study is still in progress and with a longer follow-up to analyze postlockdown situation. *The Oncologist* 2021;26:e338–e341

number of different steps of oncological care pathways (screening, diagnosis, multidisciplinary tumor board meeting [MTBM], diagnosis announcement procedure [DAP] and treatment) were collected (Fig. 1). We calculated monthly activity differences between 2019 and 2020, focusing on the 3-month COVID-19 pandemic period, to identify changes and to compare DAP and MTBM between both areas (Reims and Colmar). Trends were visually compared using temporal curves. Graphic representation and statistical analyses were performed using R (R Development Core Team, version 1.2.5019) and Excel (Microsoft, version 2018). This study has been registered on ClinicalTrials.gov (NCT04445870).

RESULTS

Compared with the same trimester in 2019, oncological activity decreased dramatically on all essential oncological care pathway steps during the COVID-19 pandemic. The trends and comparisons of monthly activity volume are depicted in Figures 1 and 2.

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Essential oncology care pathway steps	Monthly activity indicators	Tertiary care centers (a)					General hospital in outbreak epicenter (b)				
		January	February	March	April (d)	May	January	February	March (e)	April	May
Screening	Mammograms (%)	2%	3%	-58%	-100%	-70%					
	Overall FIT performed (%)	8%	-12%	-30%	-86%	-34%					
	Positive FIT (%)	-6%	-18%	-25%	-92%	-53%					
	Positive FIT/FIT performed ratios (%)	-13%	-6%	7%	-42%	-29%					
Histopathologic analyses for cancer	Biopsies (%)	14%	10%	4%	-27%	-32%					
	Surgical specimens (%)	-8%	-14%	-11%	-35%	-30%					
	Extemporaneous (%)	42%	25%	20%	-23%	-62%					
	Cytology (%)	-2%	19%	-29%	-70%	-28%					
	Samples (overall) (%)	0%	6%	-14%	-48%	-31%					
Biomolecular analyses	Germline analyses (overall) (%)	22%	-40%	10%	186%	-79%					
	Colorectal cancer (somatic) (%)	36%	-33%	-59%	0%	-59%					
	Bronchopulmonary cancer (somatic) (%)	23%	0%	-31%	37%	-20%					
	Other (somatic) (%)	140%	63%	-20%	-22%	50%					
	Somatic analyses (overall) (%)	36%	-7%	-44%	-19%	-60%					
Diagnosis	Biomolecular analyses (overall) (%)	28%	-18%	-24%	12%	-69%					
	PET/CT performed (%)	15%	0	10%	-22%	18%					
	Oncogeriatric evaluations (%)	64%	48%	-36%	-86%	-48%					
	Medical diagnosis delivery consultations (%)	16%	-6%	-14%	-54%	-39%	-17%	27%	-31%	-11%	-17%
	Assigned personalized care plans (%)	8%	-21%	-4%	-55%	-44%	19%	-31%	-33%	-53%	-59%
Assessment and diagnosis delivery procedure (c)	Post diagnosis nurse consultations (%)	20%	-6%	-8%	-19%	-29%	-19%	-29%	-51%	-84%	-81%
	First-time reviewed patient files, referred from the reviewing center (%)	26%	26%	43%	-37%	-23%					
	First-time reviewed patient files, referred from external care centers (%)	9%	57%	-27%	-49%	-40%					
	First-time reviewed patient files(overall) (%)	-4%	26%	8%	-31%	-39%	-17%	27%	-31%	-11%	-17%
	Reviewed patient files (overall) (%)	-1%	4%	6%	-31%	-28%	-17%	18%	-29%	-7%	-8%
Multidisciplinary tumor board meetings	Implanted venous access devices (%)	7%	14%	22%	-18%	-35%					
	Occupation rates (%)	2%	0%	-9%	-16%	-8%					
	Daycare admissions for chemotherapy (%)	10%	10%	4%	-8%	-9%					
	Regular medical oncology outpatients (%)	15%	12%	9%	-1%	2%					
	Prepared chemotherapy bags (%)	20%	15%	8%	-1%	-12%					
Treatment	Hyperthermic intraperitoneal chemotherapy bags (%)	-20%	-83%	-100%	-100%	-100%					
	Hepatic chemoembolizations (%)	-29%	-33%	-25%	-50%	14%					
	Carcinological surgery procedures (%)	-14%	11%	-8%	-33%	-30%					
	Computed Tomography simulation sessions (%)	-21%	-16%	-23%	4%	-29%					
	Courses of radiotherapy (%)	-3%	-1%	14%	-16%	-8%					
Radiotherapy	Regular radiotherapy patients (%)	-5%	-5%	0%	-1%	-4%					

Figure 1. Monthly oncological activity volume difference between 2019 and 2020. Monthly changes in volume of oncological activities (%) are calculated with $(2020 \text{ activity} - 2019 \text{ activity}) / 2019 \text{ activity}$ and are illustrated through color variation from green (rising activity) to red (decreasing activity). Grey areas show unavailable data for the first analyses of the study. Further data collection is still in progress. (a) Reims University Hospital and Cancer Institute (Grand East region in France). (b) Colmar General Hospital (Grand East region in France). (c) Diagnosis announcement procedure (3 steps) is a measure of the first French cancer plan (2003-2007). (d) Overall inpatients peak in Reims (April 5, 2020). (e) Overall inpatients peak in Colmar (March 24, 2020) Abbreviations: FIT, fecal immunochemical test; PET/CT, Positron emission tomography with computed tomography.

Colon and breast cancer screening test fell by 86% to 100%, respectively. All activities linked to sampling, histopathological (-48%), and biomolecular analyses (-69%) were drastically reduced. A decrease in medical announcement consultations (-54%) and oncogeriatric evaluations (-86%) was also observed; fewer medical patient files (-31%; including those of new patients; -39%) were reviewed in MTBM. Regarding treatment, systemic chemotherapy (-9%) and radiotherapy (-16%) experienced a lighter decline, whereas oncological surgical procedures were heavily impacted (-30%) over a 2-month period. All clinical research trials were stopped for 3 months (data not shown), and all hyperthermic intraperitoneal chemotherapies were postponed.

Although the COVID-19 outbreak occurred earlier and with more intensity in Colmar, it had a comparable impact in both areas regarding MTBM and DAP.

DISCUSSION

COVID-19 has had a dramatic impact on all aspects of the cancer care pathway, particularly in terms of screening, diagnosis, and surgical treatment. To the best of our knowledge, this is the first study assessing the overall management of cancers from screening to treatment. Screening and a drop in the number of screening-related samples were observed in Belgium [3]. Reduction in cancer

diagnoses has been noted in other European countries, particularly for colon and skin cancers [4, 5]. Primary care was also impacted, with urgent cancer referrals falling by 60% in the U.K. [6]. We experienced a similar decrease in new oncological referrals. In Spain, outpatient visits decreased, and remote visits using phones or internet became a standard [7]. As in a U.S. tertiary care cancer center (MD Anderson Cancer Center), oncological surgical care was drastically reduced because of limited availability of health personnel, logistical resources, and available beds [8]. Facing this resource scarcity, an international collaborative group recommended a fair and consistent prioritization to maximize health benefits, considering the patient, its disease, and its prognosis [9]. This global decrease in all essential oncology care pathway steps contrasts with the relative stability of chemotherapy and radiotherapy use. Patients anteriorly diagnosed with cancers continued to be treated. Limitations of the present study include lack of information on patient characteristics and prognosis. The consequences of delay in diagnosis and treatment have only been estimated in model-based analysis [10]. Complementary qualitative studies are warranted to estimate the real impact on cancer outcomes. The ongoing CAPANCOVID-19 study aims to evaluate the impact of the COVID-19 pandemic on management and outcomes of patients with exocrine pancreatic cancer (<https://clinicaltrials.gov/ct2/show/NCT04406571>). The current ONCOCARE-COV study is still in progress, and with a longer follow-up, we

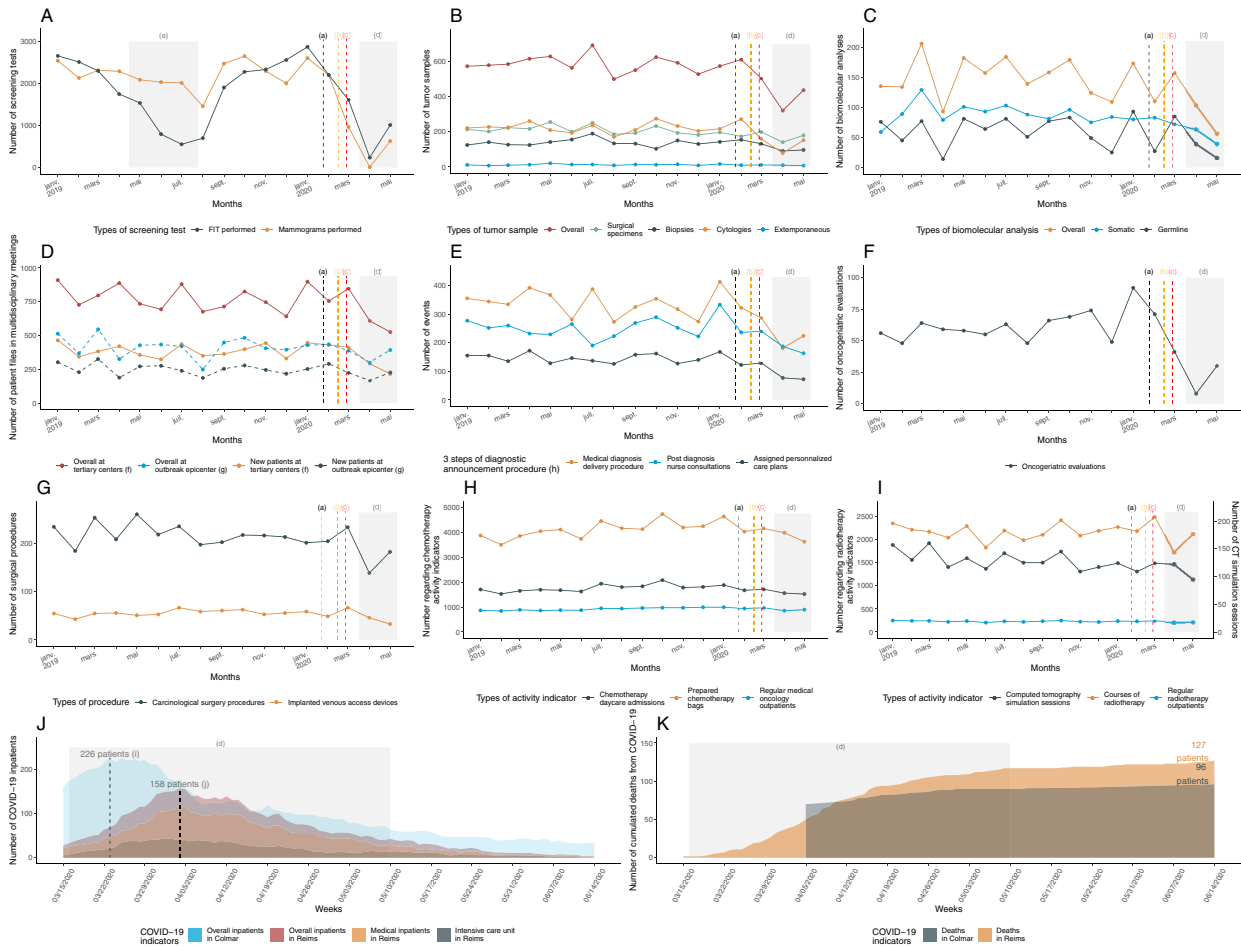


Figure 2. Temporal curves of monthly oncological activity volume (between January 2019 and May 2020) and of daily COVID-19 pandemic indicators (between March 16, and June 15, 2020). (A): Screening activity in the Marne county. (B): Carcinologic histo-pathological analyses depending on tumor samples. (C): Biomolecular analyses (somatic and germline). (D): Multidisciplinary board meeting activity (comparison between Reims and Colmar centers). (E): Diagnostic announcement procedures (h). (F): Oncogeriatric evaluations. (G): Oncological surgical activity. (H): Cytotoxic chemotherapy activity. (I): Radiotherapy activity. (J): Daily COVID-19 inpatients. (K): Daily cumulated deaths from COVID-19. (a) The black dashed vertical line marks timeline of the first diagnosed COVID-19 patient in France (January 24, 2020). (b) The orange dashed vertical line marks timeline of the first COVID-19 deceased patient in France (February 15, 2020). (c) The red dashed vertical line marks timeline of the first COVID-19 admitted patient in Reims (February 27, 2020). (d) The gray rectangular area marks the lockdown period (from March 17, 2020, to May 11, 2020). (e) The gray rectangular area marks a period of FIT stock shortage (from April 15, 2019, to July 25, 2019). (f) University Hospital and Godinot Cancer Institute, Reims, France. (g) Pasteur General Hospital, Colmar, France. (h) Diagnosis announcement procedure (3 steps) is a measure of the first French cancer plan (2003–2007). (i) The black dashed vertical line marks timeline of the overall inpatients peak (226 inpatients) in Colmar (March 24, 2020). (j) The black dashed vertical line marks timeline of the overall inpatients peak (158 inpatients) in Reims (April 5, 2020). Abbreviations: COVID-19, coronavirus disease 2019; CT, computed tomography; FIT, fecal immunochemical test.

will be able to analyze the postlockdown volume of oncological activity and the impact of a possible second COVID-19 epidemic wave in relation to types of cancer.

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