



COVID-19 and Testicular Tumors

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Abstract

This is a letter to the editor on the discussion on COVID-19 and testicular tumors.

Letter to the editor

Testicular tumors are among the commonest malignancies in males in the age range of 15-40 years, with approximately 1 out of 250 men and boys will be diagnosed in their lifetime. The most common subtype is Germ Cell Tumor (GCT) [1]. Recent trends have shown increased incidence but decreased mortality of testicular malignancies in most countries [2]. Current treatment methods depend on the subtype of the tumor, but can include radiation, chemotherapy, or surgery (radical inguinal orchiectomy), with generally good survival outcome, with survival of GCT > 95% even in the case of metastasis [1, 3].

In December 2019, the outbreak and subsequent pandemic of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infected hundreds of millions of people across the globe. Originating in Wuhan, China, the respiratory disease officially reached pandemic status March 11, 2020. Due to COVID-19's interhuman transmission pattern, many social restrictions were established in hopes of diminishing risks. This discouraged various cancer screenings that were fundamental for diagnosis and treatment for such malignancies. COVID-19 symptoms of fever, cough, shortness of breath, and difficulty breathing demanded exhaustion of healthcare staff and precedence of resources, leading to significant diversions of medical resources away from elective outpatient procedures [3]. It was reassuringly noted however that, in the context of generally favorable prognosis of testicular cancer patients, most testicular cancer patients tend to be young patients

who are at lower risk for severe COVID-19-related complications than older patients [3]. Urgency is generally recommended for diagnosis and treatment, however these procedures could be complicated by positive/active COVID-19 infection, in terms of safety to the patient and to health-care providers and by the difficulty of allocating hospital resources [3]. The European Association of Urology (EAU) recommends ultrasound of the testes within 24 hours of the exam, and diagnostic imaging within 7 days if orchiectomy is planned [3]. EAU does not recommend delaying outpatient orchiectomy beyond 2-3 days if the patient is positive for COVID-19, while inpatient admission would be necessary in the setting of metastasis [3]. Active surveillance may be assisted with telehealth in situations of seminomas or low risk non-seminoma germ cell tumors [3]. Metastasis warrants emergent treatment; however, chemotherapy may be started within 7 days of positive COVID infection [3]. Guidelines provide various chemotherapeutics are for testicular malignancies, however, it is important to consider avoidance of bleomycin in the setting of COVID-19 infection due to the potential adverse effect of pulmonary fibrosis [3].

A retrospective single-center analysis in Turkey of 65 germ cell tumor patients compared timing and outcomes among pre-pandemic and intra-pandemic and showed a prolonged duration of symptoms, a delay in orchiectomy (definitive treatment), and increased risk of the complication of GCT, metastasis, in the intra-pandemic group [1]. The group underscored that they believe these discrepancies were secondary to hesitancy in hospital admission

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of GCT patients. The group also noted significant decreases in diagnoses of other malignancies, such as prostate, cervical, and colorectal malignancies, thus suggesting that the observations are not unique to testicular cancer [1]. In fact, many processes such as prostate, cervical and breast cancer screenings were decreased, substantially increasing the risk of untreated precancers evolving into invasive cancer [4]. A systematic review and meta-analysis saw that COVID-19 infection of host cells is facilitated by angiotensin-converting enzyme 2, transmembrane protease serine 2 (TMPRSS2), and host cells proteases, which are all commonly found in cancer patients [5]. Similar to other cancers, cancerous testicular tumor patient's immunosuppressive states are shown to increase susceptibility to COVID-19 [5]. Although this susceptibility factor is rather low in cancerous testicular tumors, other malignancies such as lung cancer yield higher susceptibility rates to COVID-19.

In short, the COVID-19 pandemic has resulted in significant disruption in the treatment and diagnosis of testicular cancer. More research is needed to assess the effect in other regions of the world.

Acknowledgements

None.

Ethical policy

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. Approval from institutional ethical committee was taken.

Availability of data and materials

All data generated or analysed during this study are included in this publication.

Author contributions

YF initiated the idea. JP, TP, & CC wrote the draft. MRW and YF made the critical revision to the draft.

Competing interests

The authors declare no conflict of interest.

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