

Beyond The Covid 19 Pandemic; Incidentally Diagnosed Rib Tumors, A Case Series

Ahmet Bülent Kargı*

Antalya City Hospital Thoracic Surgery Departement, Antalya Şehir Hastanesi Göğüs Cerrahisi Kliniği, Göçerler Mahallesi 5379 Sokak 07080 Kepez/Antalya Türkiye

Received: 2025-10-27; Received in revised form: 2025-11-23; Accepted: 2025-12-05

Abstract

Background: The rapidly spreading and fatal infection caused by the virus called COVID-19, primarily damages to the upper and lower respiratory tract. Thoracic CT scans, which have become an important tool in the diagnosis of the disease, can reveal asymptomatic cases in various organs such as the lungs, the thoracic wall, the mediastinum and even the upper abdominal organs. On the other hand, rib tumors are quite rare; most are benign and are usually detected incidentally during radiological examinations performed for other reasons. In this article, we present for the first time in the literature six cases of rib tumors that were incidentally detected and operated on during the pandemic era.

Methods: A total of six patients, five female and one male, who underwent surgery with a diagnosis of rib tumor between March 2020 and October 2021 during the Covid-19 pandemic were included in the study.

Results: None of them had obvious complaints suggesting rib pathology. 5 of 6 patients underwent en bloc partial rib resection with sufficient margins. No patient required prosthetic reconstruction, no malignant pathology was reported, and all patients were discharged within an average of 2.5 days.

Conclusions: While the COVID-19 pandemic has cost humanity over two years, causing the deaths of approximately 7.5 million people and disability for many more, incidental findings during screening may have contributed to earlier diagnosis and treatment. While most rib tumors are benign, they should be considered potentially malignant until proven otherwise and should be operated on according to surgical principles.

Keywords: Pediatric head injury; Traumatic brain injury; Epidemiology; Road traffic accident; Glasgow Coma Scale

Citation: Kargı AB. **Beyond The Covid 19 Pandemic; Incidentally Diagnosed Rib Tumors, A Case Series.** *Acad J Surg*, 2025; 8(4): 146-150.

Introduction

This new coronavirus infection, first reported in China in December 2019, was named COVID-19 and declared a global pandemic by the World Health Organization (WHO) in March 2020 because it was easily transmitted, spread rapidly, and caused death in a short time. The natural course of the disease involved cytokine storm, widespread thrombosis, and usually respiratory failure and death of the patient, starting from the upper and lower respiratory tract [1,2]. Thoracic computed tomography (CT) rapidly became a crucial tool in the diagnosis and follow-up of the disease due to its transmission through the respiratory tract, proliferation in the respiratory epithelium, and the major morbidity and mortality associated

with lung damage [3]. These scans revealed that, in addition to COVID-19, asymptomatic incidental pathologies of the lungs, thorax, mediastinum, and even upper abdominal organs were also detected in thoracic CT results [4–6].

On the other hand, primary tumors of the ribs account for only 5% to 7% of all primary bone neoplasms, with approximately 30% being malignant [7,8]. Although most patients present with palpable masses or pain, incidental diagnoses during routine imaging for other problems are not uncommon [8]. While most rib lesions are benign, excisional removal with adequate margins remains a current and valid method for both diagnosis and treatment [8].

Here, we present six cases of rib tumors that were incidentally detected on thoracic CT scans during the

* **Corresponding author:** Ahmet Bülent Kargı

Antalya City Hospital Thoracic Surgery Departement, Antalya Şehir Hastanesi Göğüs Cerrahisi Kliniği, Göçerler Mahallesi 5379 Sokak 07080 Kepez/Antalya Türkiye.

Email: abkargi@yahoo.com



COVID-19 pandemic and operated on by the same surgeon in the same hospital. This series represents the first publication in the literature on incidental rib lesions during the COVID-19 pandemic period.

Material and Methods

Patients referred to the Thoracic Surgery Department of Istanbul Private WM Pendik Medicalpark Hospital with incidentally detected rib tumors on thoracic CT performed for suspected COVID-19 between March 2020 and December 2021 were evaluated. Except for patient #6, who was referred from the Pediatrics Department, all patients were referred to our clinic from the Chest Diseases and COVID-19 Outpatient Clinics.

A total of six patients—five female and one male—with a mean age of 29.16 years (range: 11–51) were included in the evaluation. The demographic characteristics of the patients are shown in Table 1.

The patients were hospitalized after a negative COVID-19 PCR test was confirmed. The current COVID-19 protection protocols of the Turkish

Ministry of Health [9], along with the rules and recommendations of the local Hospital Infection Control Committee, were applied, and personal protective equipment (PPE) was used during all diagnostic and surgical procedures.

Results

All patients underwent surgery under general anesthesia, with 5 of 6 patients undergoing “en bloc” partial resection of a single rib, including surrounding soft tissue at least 2 cm proximal and distal to the tumor (Figure 1). In the remaining patient, an incisional biopsy/curettage was performed on the mass in the sternocostal joint. None of the patients required chest wall prosthetic reconstruction, and no malignant pathology was reported in any of the cases (Table 1).

Case 1

In March 2020, a 28-year-old female patient was admitted to the hospital with fever and cough,

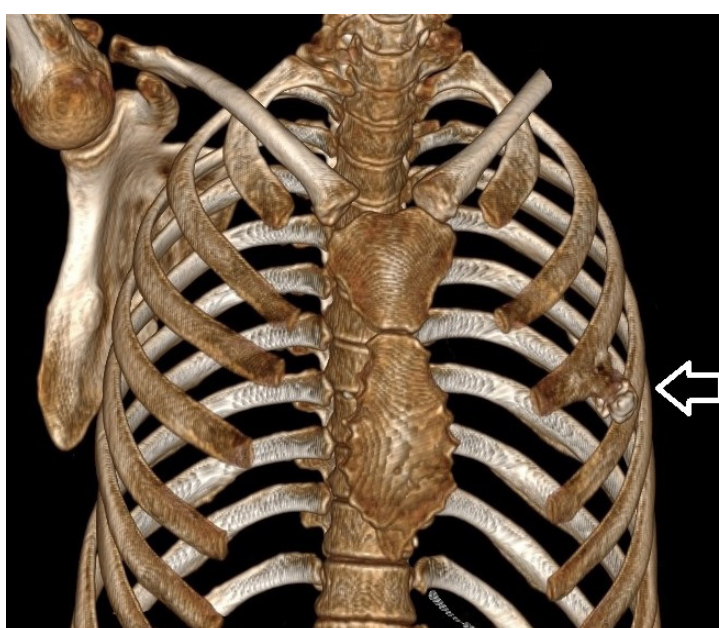


Figure 1: En bloc rib excision material of patient # 2 with the 2 cm margins.

Table 1: Demographic features of patients.

No	Age	Gender	Operation date	Side	Rib no	Pathology
1	28	F	March 2020	Left	9	Perineuroma
2	40	M	August 2020	Left	7	Fibroma
3	26	F	November 2020	Left	3	Chondroma
4	51	F	April 2021	Left	1	Degeneration
5	19	F	July 2021	Left	3	Exocytosis
6	11	F	October 2021	Left	8	Chondroma



Figure 2: 3D CT visualized the tumor in the left third rib in patient #3.

and a radiological examination was performed with suspicion of COVID-19. A $3 \times 2.5 \times 2.5$ cm mass was detected in the left 9th rib on thoracic CT. The patient had no complaints related to the ribs. Breast examination, lung parenchyma, and abdominal CT were normal. The 9th rib was excised en bloc with the surrounding tissue as a partial rib resection under general anesthesia, and the patient was discharged on the second day after the operation. Perineuroma was confirmed as the result of the pathological examination.

Case 2

In August 2020, a 40-year-old male patient was admitted to the hospital with suspicion of COVID-19 pneumonia. The patient had no prior rib-related symptoms. Radiological examination revealed a $6 \times 2.5 \times 1.7$ cm expansile mass in the left 7th rib on thoracic CT. No lesion was detected in the lung parenchyma. En bloc partial rib resection was performed under general anesthesia. The patient was discharged on the second day after surgery, and the pathological examination confirmed fibroma.

Case 3

In November 2020, a 26-year-old female patient underwent a radiological examination with suspicion of COVID-19. A 3×2 cm expansile mass was detected in the left third rib on thoracic CT (Figure 2). En bloc partial rib excision, including the mass and surrounding tissue, was performed under general anesthesia. The patient was discharged on the third day after surgery, and the pathological examination confirmed chondroma.

Case 4

In April 2021, a 51-year-old female patient was admitted to the hospital with suspicion of COVID-19. Chest CT showed irregularity and exocytosis in the adjacent tissues of the left first sternocostal joint. Detailed anamnesis revealed that the patient had been experiencing swelling at the junction of the left first rib and sternum, which had been increasing over the past few months, with limited movement, but she had not gone to the hospital due to the pandemic. An incisional biopsy/curettage was performed on the mass in the sternocostal joint under general anesthesia. The patient was discharged on the third postoperative day, and the pathological examination confirmed degeneration.

Case 5

In July 2021, a 19-year-old female patient was admitted to the hospital with suspicion of COVID-19. Radiological examination revealed a 12×6 mm mass in the left third rib on thoracic CT (Figure 3). The patient had no complaints related to rib pathology. It was noted that she had previously been diagnosed with exostosis in the distal right femur and was under follow-up (Figure 3). The protruding part of the rib was excised under general anesthesia. The patient was discharged three days after the operation, and the pathological examination confirmed exostosis.

Case 6

In October 2021, an 11-year-old female patient was admitted to the hospital with suspicion of COVID-19 in her entire family. In addition to

COVID-19-specific findings on thoracic CT, an expansile eccentric lytic lesion on the lateral side of the left 8th rib was reported as being compatible with extramedullary hematopoiesis or enchondroma. After COVID-19 receded and PCR results turned negative, en bloc partial rib resection was performed under general anesthesia under elective conditions. The patient was discharged three days later, and the pathological examination confirmed chondroma.

Discussion

After the first symptoms emerged in China in December 2019, it was determined that this new infection was caused by a novel virus from the coronavirus family and was named COVID-19 [1,2]. Due to its nature, the disease is highly contagious, spreads rapidly, and can lead to death within a short period; the WHO declared it a global pandemic in March 2020. The first case was reported in Türkiye around the same time. In the natural course of the disease, the upper and lower respiratory tracts are primarily affected; most patients then develop a cytokine storm, a tendency to thrombosis, lung fibrosis, and eventually respiratory failure, leading to admission to the intensive care unit and death [1,2]. Thoracic CT has become an indispensable method in the diagnosis and follow-up of the disease because the virus is transmitted primarily through the respiratory tract, multiplies in the respiratory epithelium, and causes significant morbidity and mortality due to lung damage. COVID-19 lung parenchymal findings appear on CT as diffuse ground-glass opacities at the periphery of the lungs. Before the Polymerase Chain Reaction (PCR) method became widespread, thoracic CT was the only reliable diagnostic tool [3].

Soon after the first case was detected in Türkiye on March 11, 2020, the number of cases increased rapidly. During this period, Türkiye ranked 11th among countries with the highest number of cases worldwide and 19th in deaths, with just over 100,000 reported [10]. It is estimated that thousands of CT scans were performed in Türkiye until the pandemic restrictions ended. While 36.8 CT scans were requested per 1,000 examinations in 2018, this number increased by 83% to 67.4 in 2020 [11,12].

Incidental tumors, or incidentalomas, are defined as abnormalities detected by chance on various imaging modalities requested for completely different clinical reasons. They are usually discovered in patients without complaints who undergo imaging for reasons such as trauma, pre-employment examinations, or cardiac CT [4].

Rib tumors account for 5% to 7% of primary bone tumors, of which only about 30% are malignant [7,8]. Although some patients present with palpable masses

or pain in the chest region, incidental diagnosis is more common during radiological examinations performed for other reasons [8].

Despite advances in radiographic imaging, all rib lesions should be considered malignant until proven otherwise. An “en bloc” excision with safe margins remains a current and valid method for both diagnosis and treatment [7,8].

The COVID-19 pandemic, which confined people to their homes and disrupted at least two years of daily life, also caused the death of approximately 7.5 million people worldwide until it was officially declared over by the WHO on May 5, 2023 [11]. The effects of this unusual viral infection continue, including pulmonary fibrosis, long-term loss of smell, a tendency toward thrombosis, and persistent morbidity, with new complications emerging every day.

In spite of all the negativity, the pandemic paved the way for various benefits for humanity and our planet, such as increasing hygiene awareness, reducing environmental pollution, developing online education and interview technologies, accelerating the development of new drugs and vaccine technologies, and advancing the field of nanomedicine [13]. In addition, the intensive use of diagnostic procedures such as blood tests and radiological imaging has led to the coincidental diagnosis of silent diseases. During thoracic CT scans, asymptomatic findings have been incidentally detected in the thorax, mediastinum, upper abdominal organs, and even lungs, and articles have been published worldwide regarding their treatments [4,6].

We could not identify any other articles on rib pathologies incidentally observed in radiologic examinations during the pandemic, which is the subject of our case series.

The first limitation of this study is that all cases were collected from a single center and operated on by a single surgeon. The second limitation is that, due to the restrictive conditions of the pandemic, PET-CT could not be performed in case #2, who had a 6.5-cm mass in her rib, despite the indication. In the other cases, no clinical findings suggestive of primary malignancy or metastatic disease were initially observed.

Conclusion

Thoracic CT, which has been widely used in the diagnosis and follow-up of COVID-19, has also revealed silent thoracic, pulmonary, mediastinal, upper abdominal, and chest wall pathologies. In this series, we present, for the first time in the literature, incidental rib lesions that were diagnosed and excised during the COVID-19 pandemic. The increased use

of CT during the outbreak may have contributed to greater awareness and detection of incidental rib tumors. However, additional series are needed to confirm this observation.

REFERENCES

1. Mohamadian M, Chiti H, Shoghli A, et al. COVID-19: virology, biology and novel laboratory diagnosis. J Gene Med. 2021;23(2):e3303. <https://doi.org/10.1002/jgm.3303>
2. Sohrabi C, Alsafi Z, O'Neill N, et al. World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). Int J Surg. 2020;76:71-6. <https://doi.org/10.1016/j.ijsu.2020.02.034>
3. Carotti M, Salaffi F, Sarzi-Puttini P, et al. Chest CT features of coronavirus disease 2019 (COVID-19) pneumonia: key points for radiologists. Radiol Med. 2020;125(7):636-46. <https://doi.org/10.1007/s11547-020-01237-4>
4. Çetin M, Tartar H. What COVID-19 brings with: incidental solitary pulmonary nodules. Curr Thorac Surg. 2022;7(1):22-6. <https://doi.org/10.26663/cts.2022.004>
5. Yamamoto M, Akane Y, Igarashi K, et al. A SARS-CoV-2-positive patient coincidentally diagnosed with B-ALL. Pediatr Int. 2021;63(2):221-3. <https://doi.org/10.1111/ped.14432>
6. Smith SE, Keshavjee S. Primary chest wall tumors. Thorac Surg Clin. 2010;20(4):495-507. <https://doi.org/10.1016/j.thorsurg.2010.07.003>
7. Jaiswal LS, Neupane D. Benign rib tumors: a case series from tertiary care centre of Nepal and review of literature. J Surg Case Rep. 2021;2021(11):rjab518. <https://doi.org/10.1093/jscr/rjab518>
8. Sakellariadis T, Gaitanakis S, Piyis A. Rib tumors: a 15-year experience. Gen Thorac Cardiovasc Surg. 2014;62(7):434-40. doi:10.1007/s11748-014-0387-9. <https://doi.org/10.1007/s11748-014-0387-9>
9. T.C. Sağlık Bakanlığı. COVID-19 güncel dönemde COVID-19 ilişkili izolasyon ve karantina uygulamaları. Available from: <https://covid19.saglik.gov.tr/Eklenti/42333/0/covid-19gunceldondemdecovid19iliskiliizolasyonvekarintinauygulamaları-2pdf.pdf>
10. Worldometer System. Worldometer. Available from: <https://www.worldometers.info/coronavirus/worldwide-graphs/#total-deaths>. Accessed 2024 Apr 13.
11. T.C. Sağlık Bakanlığı. Sağlık İstatistikleri Yıllığı 2018. Available from: <https://dosyasb.saglik.gov.tr/Eklenti/36134/siy2018trpdf.pdf?0>. Accessed 2022 Jan.
12. T.C. Sağlık Bakanlığı. Sağlık İstatistikleri Yıllığı 2020. Available from: <https://dosyasb.saglik.gov.tr/Eklenti/43399/siy2020-tur-26052022pdf.pdf?0>. Accessed 2022 Jan.
13. Contera S, Bernardino de la Serna J, Tetley TD. Biotechnology, nanotechnology and medicine. Emerg Top Life Sci. 2020;4(6):551-4. <https://doi.org/10.1042/ETLS20200350>