Cheerios sign: A rare sign on chest computed tomography

S M Bennji,[1] MB ChB, MMed (Int), FCP (SA), Cert Pulm (SA), MPhil (Pulm); **A H Al-Kindi,**[2] MD, FRCSC, FCCP; **B Jayakrishnan,**[1] BSc, MBBS, MD, DTCD, DNB, MRCP (UK), FRCP, FCCP, FICS; **A Al Shehhi,**[3] MD; **B Itkhan,**[1] MD

[1] *Sultan Qaboos Comprehensive Cancer Care and Research Centre, Muscat, Oman*
[2] *Division of Cardiothoracic Surgery, Sultan Qaboos University Hospital, Muscat, Oman*
[3] *Division of Histopathology, Sultan Qaboos University Hospital, Muscat, Oman*

Corresponding author: *S M Bennji (saminj12@gmail.com)*

A 44-year-old man initially presented to a tertiary hospital in Oman in August 2020 with a right iliopsoas mass, which was found to be a high-grade myxofibrosarcoma. At initial presentation, there was no evidence of metastases anywhere. He underwent local resection with free surgical margins followed by adjuvant radiotherapy. A year later, he presented with mild haemoptysis for a few weeks with no other constitutional symptoms. High-resolution computed tomography (CT) showed a nodule with a central lucent cavity and a surrounding ground-glass rim known as the Cheerios sign in the right lower lobe (Fig. 1A). Bronchoscopy revealed spots of fresh blood coming from the lateral basal segment of the right lower lobe. Bronchoalveolar lavage revealed no malignant cells on cytology, no growth in bacterial and fungal cultures and a negative GeneXpert test. The patient underwent video-assisted thoracoscopic surgery and wedge resection of the nodule. Histopathological findings confirmed metastatic myxofibrosarcoma (Fig. 2). Subsequently, the patient was subjected to adjuvant chemotherapy.

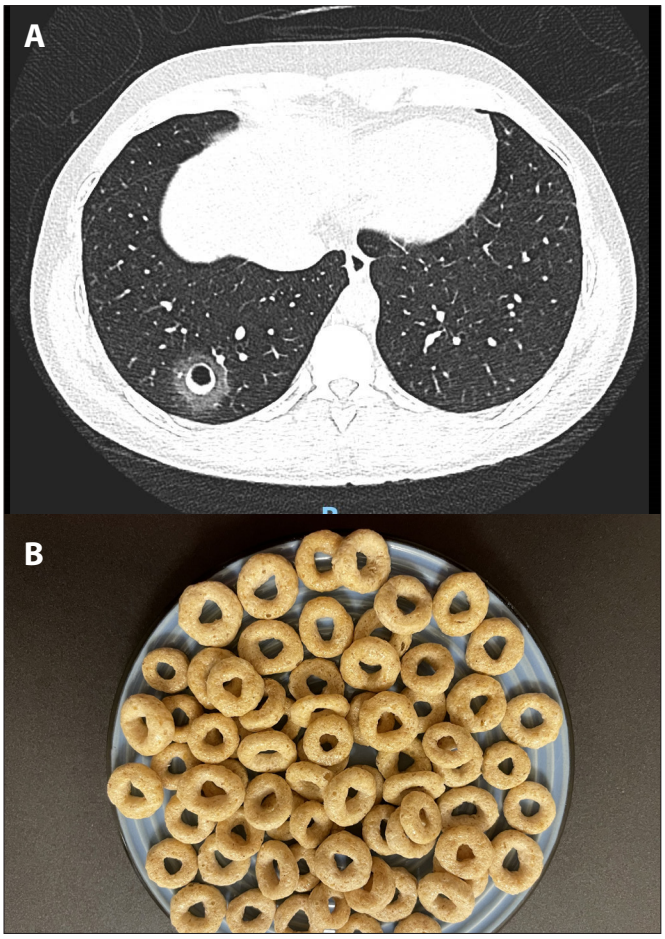

Fig. 1. (A) High-resolution computed tomography showing the Cheerios sign: a nodule with a central lucent cavity and surrounding ground-glass rim in the right lower lobe. (B) Cheerios breakfast cereal.

Cheerios sign is a rare finding on CT, defined as a nodule with central radiolucency, resembling the ring-shaped Cheerios breakfast cereal (Fig 1B).[1] It was described for the first time by Reed and O'Neil in 1993.[2] It presents as a small ring-like uniform shadowing embedded in the normal surrounding lung. It is formed by peribronchiolar proliferation of non-malignant or malignant cells as in this case.[3,4] The most common causes of cheerios sign are pulmonary Langerhans cell histiocytosis and lepidic growth of pulmonary adenocarcinoma. Differential diagnoses include granulomatosis with polyangitis, rheumatoid nodules or fungal and mycobacterial infections.[1] Although cavitary metastasis is seen in sarcomas, it has not been reported in myxofibrosarcomas. Cheerios sign in patients with underlying malignancy should be considered metastatic until proven otherwise.

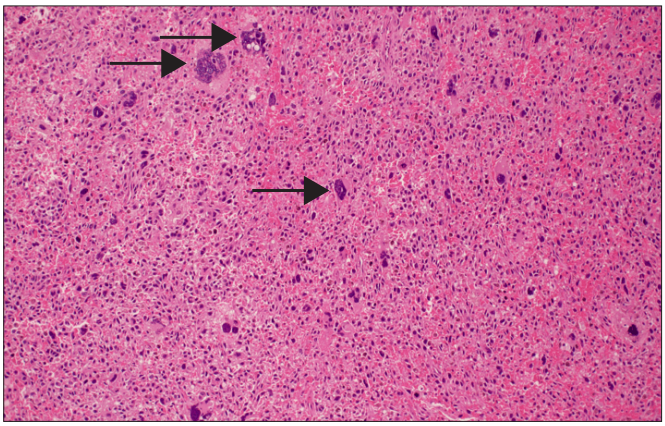

Fig. 2. Microscopic image showing a haemorrhagic tumour resembling the primary myxofibrosarcoma with no myxoid areas. The tumour consists of irregular fascicles of pleomorphic spindle and epithelioid cells (arrows). A negative immune profile confirmed the diagnosis of metastasis. Grossly, the tumour displayed haemorrhage and central cavitary necrosis (H&E 10×).

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