

Radiopaque Grass Heads in the Lung

DANIEL M. HAYS, M.D., GERTRUDE T. HUBERTY, M.D.
and BERNARD J. O'LOUGHLIN, M.D., F.C.C.P.

Los Angeles, California

Two patients have recently presented themselves with a radiological diagnosis of "calcified grass head" in the right lower lobe of the lung. Their clinical course was almost identical, and after surgical removal of the panicles both did well.

The radiological features of this disease have not been previously reported. The diagnostic and therapeutic aspects have been radically altered by developments during the past decade.

Case 1: In September, 1952 an 18 year old student (SH 57482) was found on routine photofluorogram (Figure 1) in the Student Health Service to have an obliterated right costophrenic sulcus. On a recheck 14 x 17 roentgenogram a calcified foreign body similar in shape to a grass head was observed in the right lower lung field. Although he was asymptomatic he recalled that in 1942, he choked on a piece of grass held in his mouth while talking. He denied subsequent illness at that time.

In the summer of 1945, he recalled picking wild berries in the country. This was followed by an acute gastric upset with chills, fever, nausea and vomiting. He did not recall choking at this time. Pneumonia was diagnosed and treated with penicillin. Two weeks later, after partial recovery, he had an hemoptysis of about one-half ounce. Lung abscess was diagnosed by x-ray film. Bronchoscopy was not done. Fever and pain gradually subsided without further penicillin therapy.

Subsequently, he has been completely asymptomatic. Between September 1952 and June 1955 this lesion was followed by serial chest x-ray films. He did not want other studies done.

In the summer of 1955, 13 years after his episode of choking and 10 years after his "lung abscess," he was on maneuvers with his Reserve Officer's Training Corps unit when he developed an upper respiratory infection followed by hemoptysis. This infection lasted about three weeks and left him with a cough. A few weeks later he coughed up a hard piece of material, which he thought was a segment of the foreign body. An x-ray film taken at this time showed that part of the panicle had indeed disappeared and there was considerable infiltration around the remaining segment.

Bronchograms (Figure 2) then revealed bronchiectasis of the posterior basal segment of the right lower lobe. Bronchoscopy showed purulent drainage from all right basal segments. Thoracotomy revealed a large sacular bronchiectatic abscess cavity which extended to the pleural space. Since the orifices to all basal segments were involved, the entire right lower lobe was removed. The pathological process in the resected lobe included generalized bronchiectasis throughout the lower lobe bronchi with abscess formation localized to the posterior basal and medial basal segments. The subsequent course has been uneventful but characterized by rapid weight gain.

Case 2: A 25 year old white man, (Number B8274), was admitted from the Veterans Administration Outpatient Clinic with a complaint of hemoptysis. A calcified panicle in the right lower lobe was diagnosed on the admission chest x-ray film (Figure 3).

At the age of 11 he had aspirated a "piece of foxtail grass" which was followed by "double pneumonia" and "lung abscess." Hemoptysis occurred during the initial illness, and again at 17 and at 21 years of age. At the age of 24 he had chronic cough with approximately 30 cc. of yellow sputum per day. Persistent hemoptysis and weight loss developed. Bronchograms (Figure 4) revealed extensive right lower lobe bronchiectasis and confirmed the presence of the calcified grass head in the posterior basal segment. Thoracotomy was performed which revealed obliteration of the right pleural space and basilar bronchiectasis. Segmental resection was performed. The excised lung contained a panicle which measured 6 cm. in length. The bronchi were dilated, the pleura was thickened, and the parenchyma was the site of chronic pneumonia. The postoperative course has been uncomplicated.

From the Student Health Service and the Departments of Surgery and Radiology, University of California at Los Angeles Medical Center.

Discussion

These two cases are unique in respect to the positive identification of the grass panicle which established the diagnosis prior to surgery.

The course of patients who have aspirated panicles of such grasses has been well documented.^{1, 4, 5} These barbed plant structures are unique among foreign bodies in that they rapidly move out of the range of effective endoscopy. Although their forward motion is apparently spontaneous, it is actually the result of the almost constant to-and-fro respiratory motion of the tracheo-bronchial system combined with the backward restraints of the barbed panicle. Together a "one way travel" results.² Usually the panicle migrates into the basal segments of the right lower lobe.

Ross⁵ collected 14 cases of grass head aspiration from the medical literature in 1954. In his cases the grass head worked its way through the trachea, bronchi, lungs, pleura and extruded spontaneously through the chest wall and skin. A strikingly similar series of events is described in the isolated case reports of Seydall,⁷ Purcell,³ Schring and Shaw⁶ and others. Recently, instances of surgical resection of bronchiectatic segments or of lung abscesses have been followed by the discovery of a grass head within the removed specimen. Earlier reports contain many examples of grass heads found at autopsy following death from pulmonary infection. Radiologic diagnosis of grass head in the lung has never been previously reported, so far as can be determined. It seems that in the pre-antibiotic era the usual course following aspiration of such a grass panicle

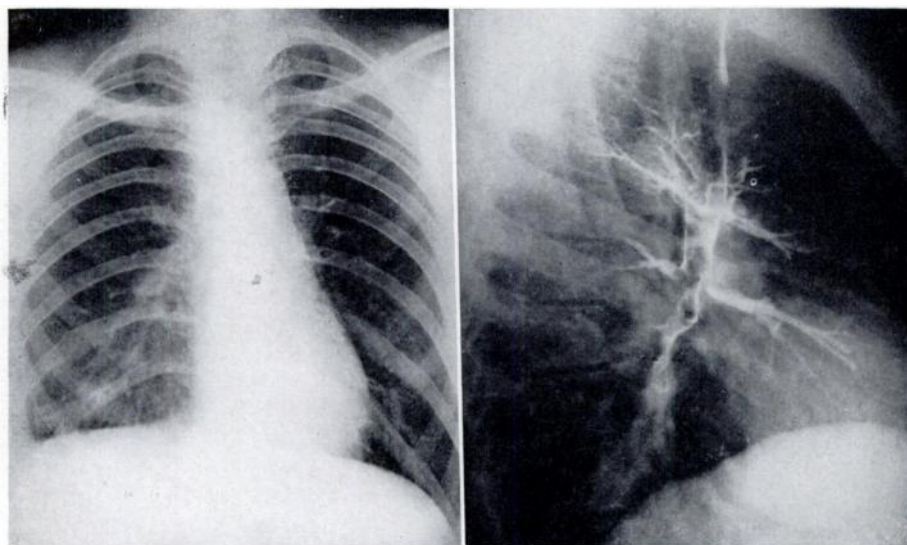


FIGURE 1

FIGURE 2

Figure 1 (Case 1): Calcified grass head in right lower lung noted first on routine photofluorogram because of pleural reaction at right base.—*Figure 2* (Case 1): Bronchiectatic basilar segments surround the calcified panicle. The upper and middle lobes and the apical segments of the lower are not involved.

was either (a) rapid passage of the foreign body through the thoracic wall with an accompanying acute febrile illness, or (b) death due to acute or subacute pulmonary infection.

In these two cases antibiotic therapy undoubtedly enabled these patients to tolerate the initial acute infection produced by the foreign body. In Case 1, a suppurative tract which extended to the pleural space was formed, the pleural space was obliterated, but there progression ceased. In both cases a state of tolerance to the foreign body developed and continued for a decade with encrustation of the vegetable matter by calcium salts. The end product was a cast of the original "grass head" in calcium which was identified on a routine recheck of a chest photofluorogram (Case 1) and on a hospital admission chest x-ray film (Case 2). In both patients extensive bronchiectasis was produced with symptoms characteristic of this condition eventually becoming manifest. Hemoptysis brought both patients to the hospital where the offending panicle was found in the posterior basal segment of the right lower lobe.

SUMMARY

The course followed by patients who aspirate panicles of certain grasses, known as "grass heads" is characterized by either (a) spontaneous passage through the lung and thoracic cage to the exterior or (b) the formation of chronic lung abscess and/or bronchiectasis.

These are usually in the right lower lobe. In the two cases described it was possible to make a preoperative radiologic diagnosis of retained "grass head" in the lung more than a decade after the aspiration occurred.

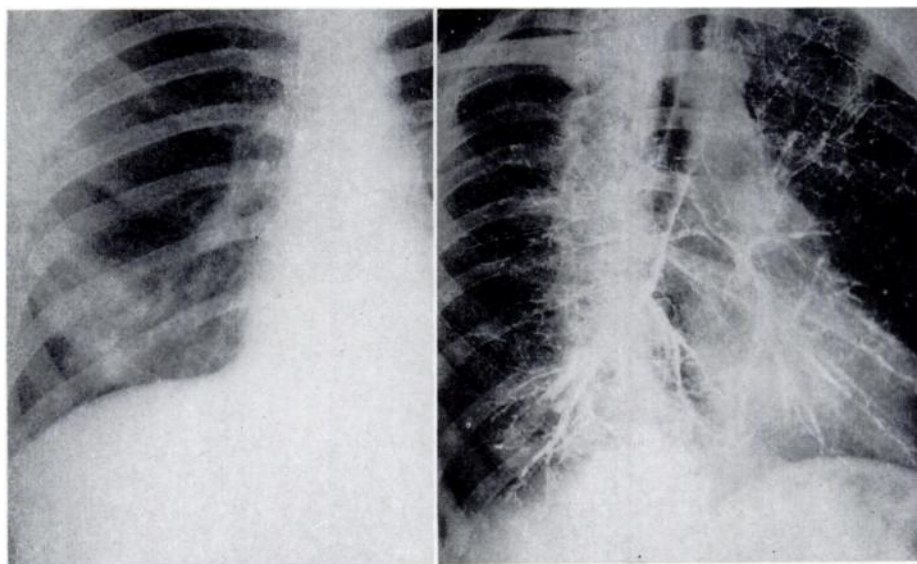


FIGURE 3

FIGURE 4

Figure 3 (Case 2): Calcified panicle in posterior basal segment of the right lower lobe noted on hospital admission chest roentgenogram.—*Figure 4* (Case 2): Bronchiectatic posterior basal segment of right lower lobe surrounding the calcified grass head. This patient was admitted because of hemoptysis.

Both cases were successfully treated by resection of the foreign body together with the bronchiectatic pulmonary segments.

Routine photofluorograms showing evidence of basal pleuritis, particularly on the right side, should be studied for the possibility of retained foreign body.

RESUMEN

La evolución de los enfermos que aspiran panículos de ciertas grasas, conocidas como "cabezas de grasa" (grass heads) se caracteriza por (a) ya sea el paso espontáneo a través del pulmón y la caja torácica hacia el exterior o (b) la formación de abscesos pulmonares crónicos y/o bronquiectasia.

Estos están habitualmente en el lóbulo inferior derecho. En los dos casos descritos fué posible hacer un diagnóstico radiológico preoperatorio de "grass head" retenida en el pulmón más de una década después de que ocurrió la aspiración.

Ambos casos fueron tratados con buen resultado por la resección del cuerpo extraño junto con los segmentos pulmonares bronquiectásicos.

Los fotofluorogramas de rutina mostrando evidencias de pleuritis basal, particularmente en el lado derecho, deben ser estudiados ante la posibilidad de que se trate de retención de cuerpos extraños.

RESUME

L'évolution que suivent les épis de certaines herbes inhalés est caractérisée par : a) soit le cheminement spontané à travers le poumon et la cage thoracique vers l'extérieur b) soit la formation d'abcès chroniques du poumon accompagnés ou non de bronchectasie.

Ils sont généralement situés dans le lobe inférieur droit. Dans les deux cas décrits, il était possible de faire un diagnostic radiologique préopératoire de rétention intrapulmonaire d'épis d'herbe plus d'une décade après l'aspiration.

Les deux cas furent traités avec succès par exérèse du corps étranger, et des segments pulmonaires bronchectasiés.

Les radioscopies systématiques, montrant une atteinte pleurale de la base, particulièrement du côté droit, doivent être considérées en gardant présente à l'esprit la possibilité d'un corps étranger.

ZUSAMMENFASSUNG

Der Krankheitsverlauf, den Patienten nehmen, die Rispen von bestimmten Gräsern aspirieren, die unter dem Namen "Grasköpfe" bekannt sind, ist gekennzeichnet, entweder a) durch eine spontane Passage durch die Lunge und Thoraxwand nach aussen oder b) durch die Bildung eines chronischen Lungenabszesses und/oder Bronchiektasie.

Diese liegen gewöhnlich im rechten Mittellappen. Bei den 2 beschriebenen Fällen war es möglich, vor der Operation die radiologische Diagnose zurückgebliebener "Grasköpfe" in der Lunge zu stellen, und zwar mehr als 10 Jahre, nachdem sich die Aspiration ereignet hatte.

Beide Fälle wurden erfolgreich behandelt mittels Resektion des Fremdkörpers zusammen mit den bronchiektatischen Lungensegmenten.

Übliche Schirmbildaufnahmen, die Anhaltspunkte für eine basale Pleuritis aufweisen, besonders auf der rechten Seite, sollte man prüfen auf die Möglichkeit von zurückgebliebenen Fremdkörpern.

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