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Subarachnoidal fat droplet deposition and fat embolism syndrome

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Accepted 11 October 2017

DESCRIPTION

A 68-year-old woman presenting with multiple rib, spine fractures, femur and ankle fractures after a fall from height was admitted. Although she responded to verbal orders appropriately at the time of admission, her consciousness drastically deteriorated after 4.5 hours of the accident. She presented a decerebrate posture and acute respiratory failure with bilateral diffuse infiltration consistent with non-cardiogenic pulmonary oedema, requiring mechanical ventilation. She was also complicated with decreased platelet count, suggesting fat embolism syndrome (FES). At the time of the acute deterioration, brain CT demonstrated no gross abnormality, except for fat droplet in the subarachnoidal space (figure 1). On the third day, MRI showed numerous pinpoint hyperintense foci in the grey and white matter of the cerebral and cerebellar hemispheres on diffusion-weighted images (figure 2), consistent with the 'starfield appearance'. Right to left shunt, including patent foramen ovale, was not evident by transthoracic ultrasonography. Although the findings on MRI improved, the fat droplet deposition in the subarachnoidal space was persistent for over 3 months. Patient's neurological recovery was limited to severe disability.

FES is a well-known complication of long bone fractures.[1] Although a causative relationship has never been suggested, this patient demonstrated both the finding of 'starfield' appearance[2 3] and persistent 'subarachnoidal fat droplet deposition'. Clinicians should consider FES in patients with the combined presentation of recent long bone fractures, hypoxaemia and impairment of consciousness. The relationship between FES and subarachnoidal fat droplet might be reminded as-yet-unevaluated condition.

Learning points

- The relationship between fat embolism syndrome and subarachnoidal fat droplet deposition might be reminded as-yet-unevaluated condition.
- A careful consideration of brain CT findings (round hypodense lesions with negative values of Hounsfield unit) may be useful to confirm clinical suspicion of cerebral fat embolism.

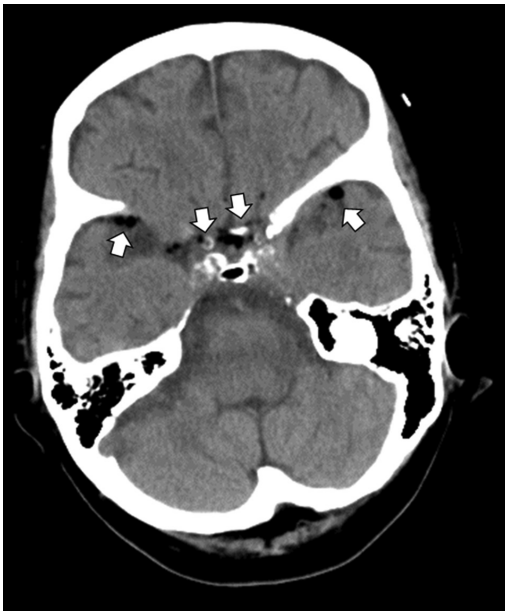

Figure 1 Brain CT shows low-density fat droplets in the subarachnoid space as indicated by arrows (Hounsfield unit of −50).

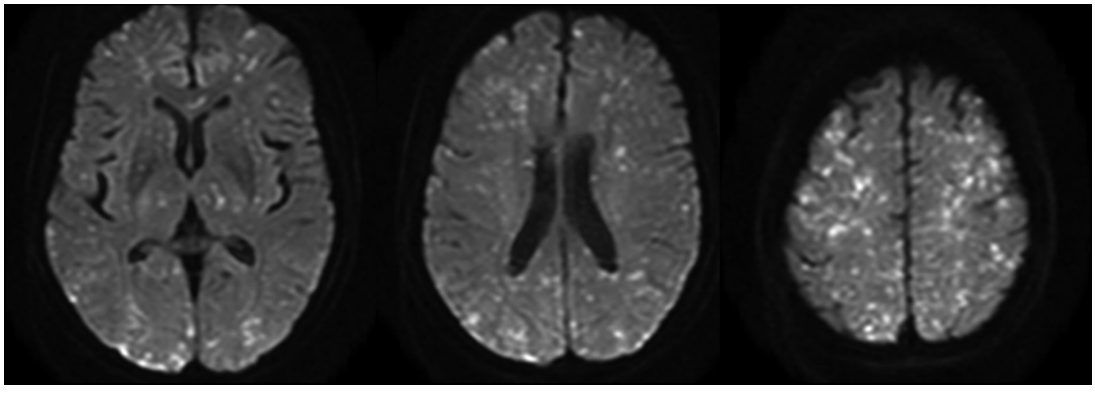

Figure 2 MRI of the brain shows multiple hyperintense foci in the grey and white matter of the cerebral hemispheres on diffusion-weighted images, consistent with the 'starfield appearance'.

To cite: Yamamoto K, Kushimoto S. *BMJ Case Rep* Published Online First: [*please include* Day Month Year]. doi:10.1136/bcr-2017-221493

Contributors Both authors cared for the patient, contributed to writing of the report and approved final version of the manuscript.

Competing interests None declared.

Patient consent Detail has been removed from this case description/these case descriptions to ensure anonymity. The editors and reviewers have seen the detailed information available and are satisfied that the information backs up the case the authors are making.

Provenance and peer review Not commissioned; externally peer reviewed.

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