

# Supplementary motor area syndrome

The [supplementary motor area](#) (SMA) syndrome is a characteristic neurosurgical syndrome that can occur after surgery in the [superior frontal gyrus](#).

It is characterized by transient [weakness](#) and [akinesia](#) contralateral to the side of the affected hemisphere. The underlying pathology of the syndrome is not fully understood but is thought to be related to lesions in the SMA, residing principally in the mesial superior frontal gyrus ([Brodmann area 6c](#)).

## Epidemiology

The [incidence](#) of transient deficits in the literature after resections of the SMA was up to 89%. Although most authors have described a complete recovery after up to 3 months for motor deficits and up to 8 months for speech disturbance, in all studies concerning motor deficits a low rate of mild but permanent morbidity in terms of disturbed coordination is reported <sup>1) 2) 3)</sup>.

## Clinical features

Clinical symptoms may vary from none to a global [akinesia](#), predominantly on the contralateral side, with preserved muscle strength and [mutism](#). A remarkable feature is that these symptoms completely resolve within weeks to months, leaving only a disturbance in alternating bimanual movements.

In a [review](#) Potgieser et al. gave an overview of the old and new insights from the SMA syndrome and extrapolate these findings to seemingly unrelated diseases and symptoms such as [Parkinson's disease](#) (PD) and [tics](#). Furthermore, they integrated findings from lesion, stimulation and functional imaging studies to provide insight in the motor function of the SMA <sup>4)</sup>.

## Differential diagnosis

FCMS has many parallels with the much more commonly encountered [supplementary motor area syndrome](#) (SMAS). SMAS is characterised by a loss of volitional movement contralateral to the site of injury (usually surgical) in the posterior medial frontal lobe immediately anterior to the primary motor cortex. It is easily recognised clinically by the profound contralateral plegia with maintenance of reflex movements <sup>5)</sup>.

## Case series

[Supplementary motor area syndrome case series](#).

## Case reports

Samuel et al. reported, the first case of isolated lower extremity SMA syndrome in the literature. This case highlights the importance of considering this rare clinical entity in the context of new or worsening postoperative neurologic deficits. Moreover, early studies did not support somatotopic organization of the SMA as in the primary motor cortex; emerging evidence suggests that delicate somatotopic representation may underlie distinct presentations like that reported in the present case<sup>6)</sup>.

## References

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