RESULTS

We are representing 10 cases with description and analysis of the angiographic findings. Analysis of the angiograms include the determination of : a) Configuration of the midline shift. b) The location of the tumor from the local displacement of cerebral vessels from their normal course. c) The tumor circulation, as regards the degree of vascularisation, presence of abnormal vessels, and changes in the circulation time.

Case No . 1 : Female, 50 Y . Plain X-ray skull showing patchy sclerosis around the area of the right sphenoid wing involving the greater and lesser wings of the sphenoid . Right common carotid angioram revealed : Mild backward displacement of the terminal part of the internal carotid artery and carotid siphon together with the commencement of the anterior and middle cerebral arteries . Slight upward elevation of the middle cerebral artery . Slightly hypertrophid ophthalmic artery . Angiographic daignosis : Right sphenoid ridge meningioma . The diagnosis was confirmed pathologically .

Case No . 2 : Female, 50 Y . Left carotid angiograme showing : Dowenward displacement with contralateral shift of the pericallosal artery . Lateral displacement of the branches of the callosomarginal artery which are stretched over the mass . The displacement is characteristic to an Extra-cerebral midline Supra-Sylvian Mass . Hypertrophied early filled meningeal branches are seen passing to the frontoparietal region, showing paradoxical filling at their end . Angiographic diagnosis : the appearance is charactristic to Falx Meningioma even if a blush is not seen . The diagnosis was confirmed pathologically .

Case No . 3 : Female, 29 Y . Plain X-ray skull showing a localised area of bone rarifaction in the fronto-parietal region involving mainly the inner table . Right common carotid angiogram revealed : Depression with localised lateral shift of the pericallosal artery . Charactristic V-shaped deformity is seen in the frontal projection caused by lateral shift of the callosomarginal artery . This displacement is charactristic to a Supra-Sylvian Parasagittal mass . The lesion is hypervascular showing multiple beaded irregular vessels extending into the localised area of bone rarifaction (previously seen in plain films) . Irregular early venous filling was noted . Its drainage is probably in the deep system which shows relatively earlier opacification than the superficial veins . The vascular pattern is highly suggestive of Glioma . Angiographic diagnosis : Supra-Sylvian Parasagittal Glioma . Pathological diagnosis Oligodendroglioma .

Case No . 4 : Female, 36 Y . Left carotid angiogram showing : Contralateral shift of the anterior cerebral vessels,more pronounced distally . The supra-clinoid portion of the internal carotid artery is displaced dowenward (closing of the siphon). Depression of the upper boundary of the Sylvian Triangle with dowenward displacement of the Angiographic Sylvian Point . The displacement is characteristic to a Supra-Sylvian Convexity mass (Fronto-parietal mass) . No blood vessels could be seen in the tumor area . Angiographic diagnosis : Anterior Supra-Sylvian (Fronto-parietal) Convexity Avascular Mass . Pathological diagnosis : Left Frontal Astrocytoma .

Case No . 5 : Female, 14 Y . Left carotid angiogram showing : Contralateral rounded shift of the anterior cerebral artery and its main branches . Stretching of the opercular branches of the middle cerebral artery which is also stretched and displaced downward together with its commencement with the anterior cerebral artery closing the carotid siphon . The venous angle is displaced backward with humping of the internal cerebral vein . The displacement is characteristic to Anterior Supra Sylvian Convexity Mass . The lesion is of low vascularity . Angiographic diagnosis : Anterior Supra-Sylvian (Fronto-parietal) Convexity Mass . Pathological diagnosis : Grade I Cystic Astrocytoma .

Case No . 6 : Female, 61 Y . Plain X-ray skull showing : Floor erosion and saucerisation of the sella turcica, with destruction of the dorsal sellar clinoids, partial absorption of the anterior clinoids . Left carotid angiogram with cross compression showing : Mild contralateral shift of the anterior cerebral artery . Stretching and spreading of the opercular branches of the middle cerebral artery . Upwards and marked backward displacement of the terminal part of the internal carotid artery together with the horizontal segments of the anterior and middle cerebral arteries . Slightly hypertrophied ophthalmic artery . Marked upward displacement of the internal cerebral vein with opening of the venous angle . The mass is highly vascular with multiple hypertrophied arterial channels and dr-

aining veins . Significant blush is seen indicating 7 cm. tumor at the posterior part of the base of the anterior cranial fossa supra,and left parasellar region . Angiographic diagnosis : medial sphenoid ridge or supra-sellar meningioma . The diagnosis was confirmed by Computed Tomography .

Case No . 7 : Male, 35 Y . Plain X-ray skull showing : Dense radio-opaque shadow involving the frontal sinus and extending upward beyond the floor of the anterior cranial fossa , and downwardward into the ethmoidal sinuses . Distension of the ethmoidal and probably the posterior part of the frontal sinuses significantly extending into the intracranial cavity . It shows air translucency . Left carotid angiogram revealing : Rounded contralateral shift and posterior displacement of the proximal part of the anterior cerebral artery and its main branches . T-shaped configuration of the internal carotid artery bifurcation with widening of the U-loop formed by the anterior and middle cerebral arteries as seen in the frontal projection . Backward shift of the angiographic venous angle with humping of the internal cerebral vein . The displacement is characteristic to a Pre-Sylvian Subfrontal mass . No blood vessels could be seen in the tumor area . Angiographic diagnosis : Frontal osteoma with a Pre-Sylvian Subfrontal Avascular Mass . Pathological diagnosis : Frontal Osteoma with a Fronto-ethmoidal Mucocele

Case No . 8 : Female, 30 Y . Left carotid angiogram showing : Spreading and stretching of the opercular branches of the middle cerebral artery with loss of undulations . The straightened non displaced opercular branch seen assumable indicates the center of the mass . There is also depression and bowing of the upper boundary of the Sylvian Triangle and the major branches of the middle cerebral artery . The displacement is characteristic to Anterior Supra-Sylvian Convexity mass . No blood vessels could be seen in the tumor area but when the external carotid artery is selectively injected, a tumor blush was seen and blood supply from hypertrophied meningeal vessels could be detected which is characteristic to meningioma . Angiographic diagnosis : Anterior Supra-Sylvian Convexity (Fronto-parietal) Meningioma . Pathological diagnosis : Left Fronto-parietal Meningioma .

Case No . 9 : Male , 68 Y . Right carotid angiogram showing : Marked square shaped contralateral shift of the proximal part of the anterior cerebral artery . T-shaped configuration of the internal carotid artery bifurcation with widening of the U-loop formed by the anterior and middle cerebral arteries as seen in the frontal projection due to stretching of these branches . No abnormal blood vessels could be seen in the tumor area . Angiographic diagnosis : Supra-Sylvian Parasagittal Mass Pathological diagnosis : Right Frontal Meningioma .

Case No . 8 : Female, 30 Y . Left carotid angiogram showing : Spreading and stretching of the opercular branches of the middle cerebral artery with loss of undulations . The straightened non displaced opercular branch seen assumable indicates the center of the mass . There is also depression and bowing of the upper boundary of the Sylvian Triangle and the major branches of the middle cerebral artery . The displacement is characteristic to Anterior Supra-Sylvian Convexity mass . No blood vessels could be seen in the tumor area but when the external carotid artery is selectively injected, a tumor blush was seen and blood supply from hypertrophied meningeal vessels could be detected which is characteristic to meningioma . Angiographic diagnosis : Anterior Supra-Sylvian Convexity (Fronto-parietal) Meningioma . Pathological diagnosis : Left Fronto-parietal Meningioma .

Case No . 9 : Male , 68 Y . Right carotid angiogram showing : Marked square shaped contralateral shift of the proximal part of the anterior cerebral artery . T-shaped configuration of the internal carotid artery bifurcation with widening of the U-loop formed by the anterior and middle cerebral arteries as seen in the frontal projection due to stretching of these branches . No abnormal blood vessels could be seen in the tumor area . Angiographic diagnosis : Supra-Sylvian Parasagittal Mass Pathological diagnosis : Right Frontal Meningioma .

Case No . 10 : Female, 35 Y . Left carotid angiogram showing : Downward and contralateral smooth displacement of the distal part of the anterior cerebral vessels . Spreading and distortion of the upper portions of the middle cerebral artery branches . The displacement is characteristic to a Supra-Sylvian parasagittal Mass . The lesion is of low vascularity . Angiographic diagnosis : Supra-Sylvian Parasagittal Mass .

Table No.6

Demonstrating the accuracy of carotid angiography in the diagnosis of Frontal Region Tumors :

Case No.	Sex	Age	Angiographic Diagnosis	Pathological Diagnosis
1	Female	50	Sphenoid ridge Meningioma.	Sphenoid ridge Meningioma.
2	Female	50	Falx Meningioma.	Falx Meningioma.
3	Female	29	Supra-sylvian Parasagittal Glioma .	Supra-sylvian Parasagittal Oligodendroglioma.
4	Female	36	Anterior Supra-sylvian Convexity Mass.	Fronto-parietal Meningioma.
5	Female	14	Anterior Supra-sylvian Convexity Avascular Mass.	Fronto-parietal Grade I.. Cystic Astrocytoma .
6	Female	61	Pre-sylvian Subfrontal Meningioma.	Supra-sellar Meningioma.
7	Male	35	Pre-sylvian Subfrontal Avascular Mass.	Frontal Osteoma + Fronto-ethmoidal Mucocele.
8	Female	30	Anterior Supra-sylvian Convexity Meningioma.	Fronto-parietal Meningioma.
9	Male	68	Supra-sylvian Parasagittal Mass.	Supra-sylvian Parasagittal Meningioma.
10	Female	35	Supra-sylvian Parasagittal Mass.	

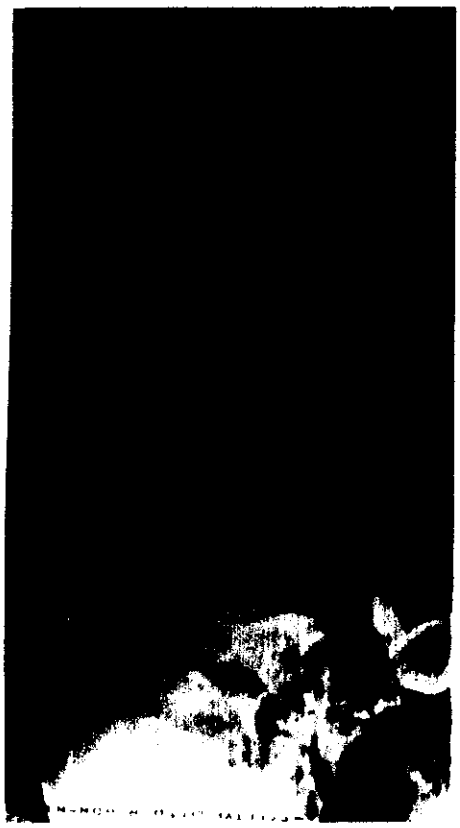
Case No . 1 : Right sphenoid ridge meningioma .

(An example to Pre-Sylvian Subfrontal Masse

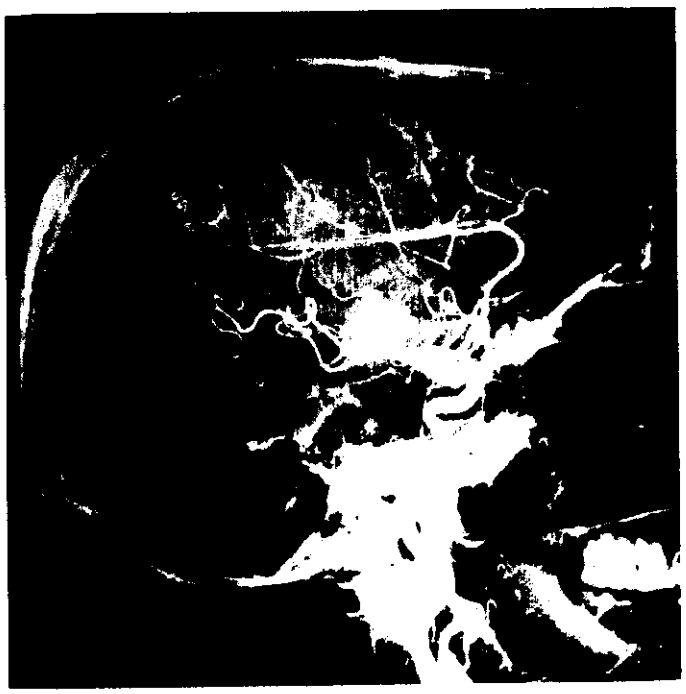
Frontal and lateral projections. Right carotid angiogram, arterial phase .

CASE No . 2 : Falx Meningioma .

(An example to Supra-Sylvian Midline Masse

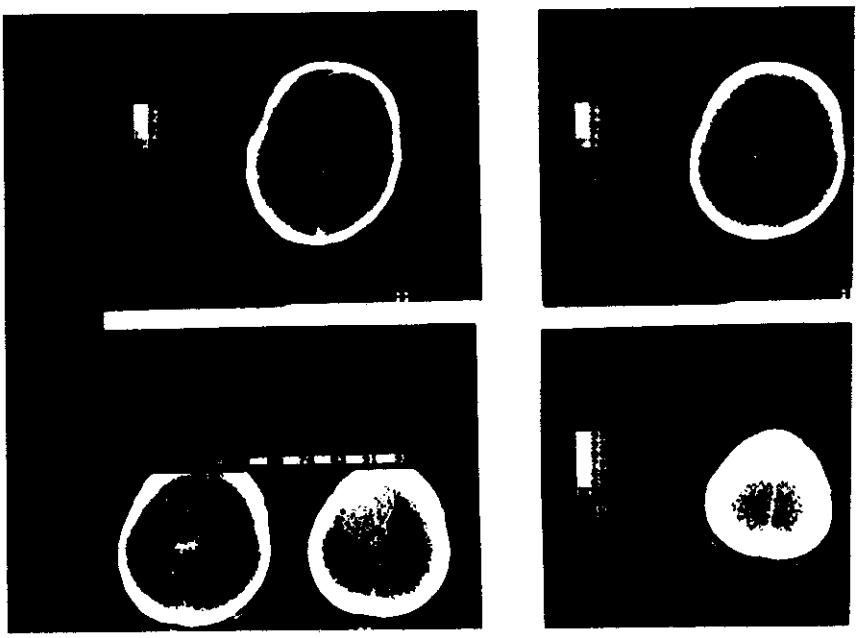


Frontal and lateral projections. Left carotid angiogram, arterial phase .



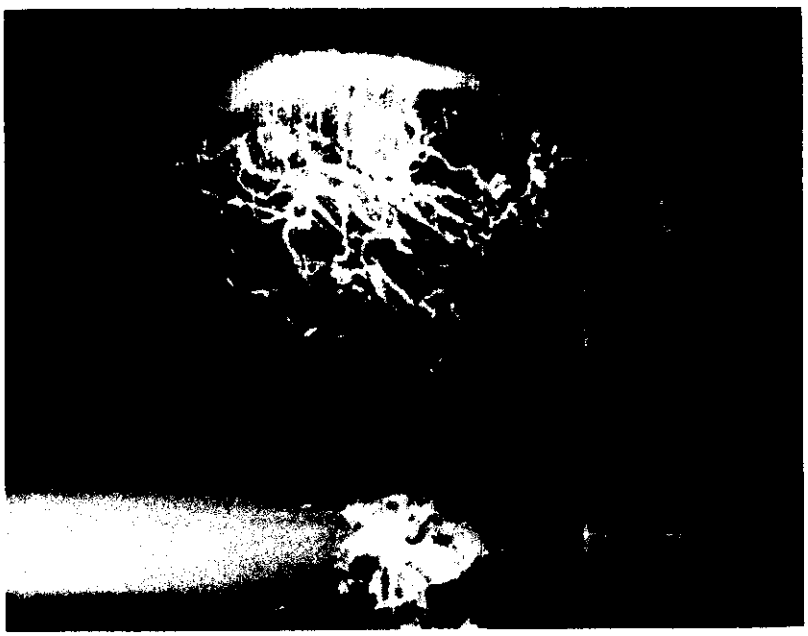
Case No 2 : cont.

C.T. : Homogenous high density rounded left pa
mass, enhanced after contrast medium .



Case No . 3 : Right Supra-Sylvian Parasagittal Glioma.

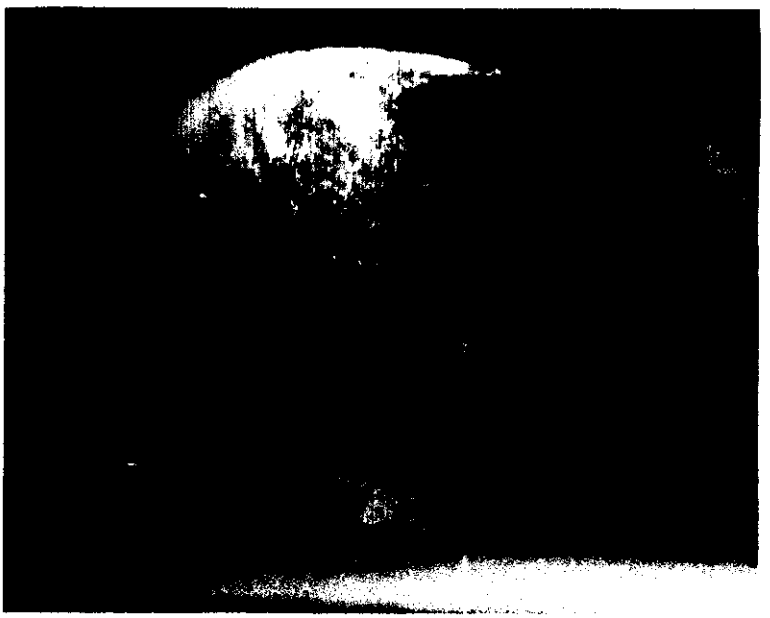
Lateral projections. Right carotid angiogram, both films are in arterial phase (early and late where multiple irregular vessels are well demonstrated) .



Case No . 3 : cont.

Frontal projection. Right carotid angiogram, arterial phase .

Lateral projection. In early venous phase showing relative early filling of the deep venous system .



Case No . 4 : Anterior Supra-Sylvian Convexi

Mass .

Frontal and lateral projections . Left carotid angiogram, arterial phase .

Case No . 5 : Anterior Supra-Sylvian Convexity Mass .

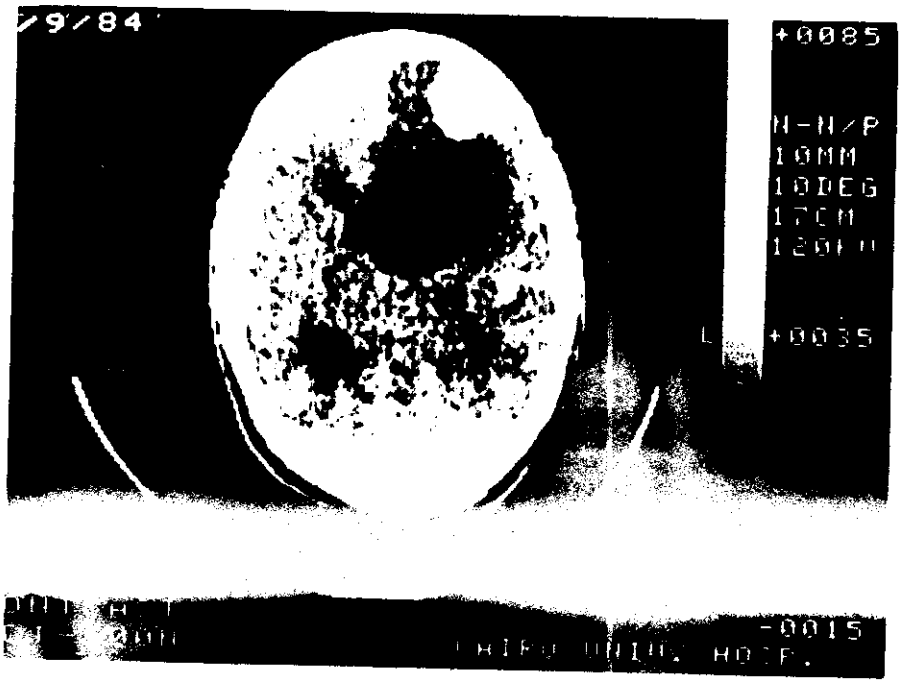
Frontal projection . Left carotid angiogram, arterial phase .

Lateral projection, arterial phase.

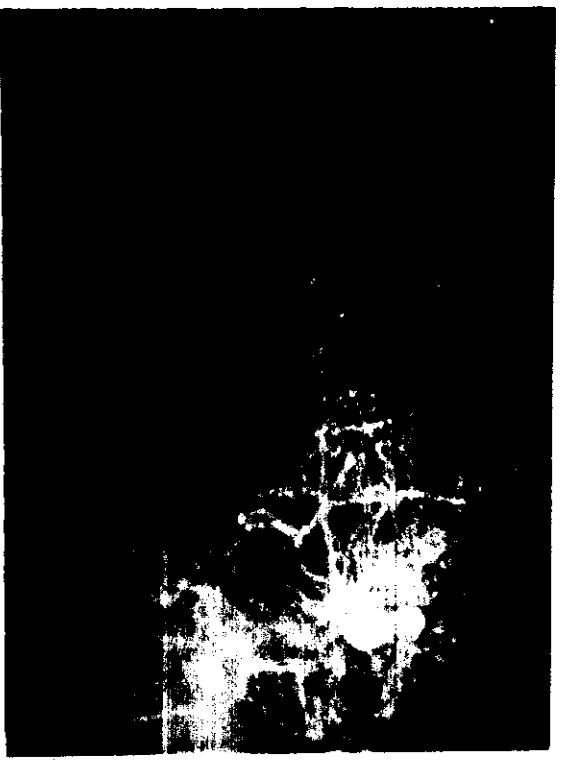
Case No . 5 : cont.

Lateral projection . Left carotid angiogram , venous phase .

C.T. : Large low attenuation frontal lesion. A densely enhancing nodule is seen after I.V. contrast injection .



Case No 6 : Medial sphenoid ridge or Supra-sellar Meni
ioma .

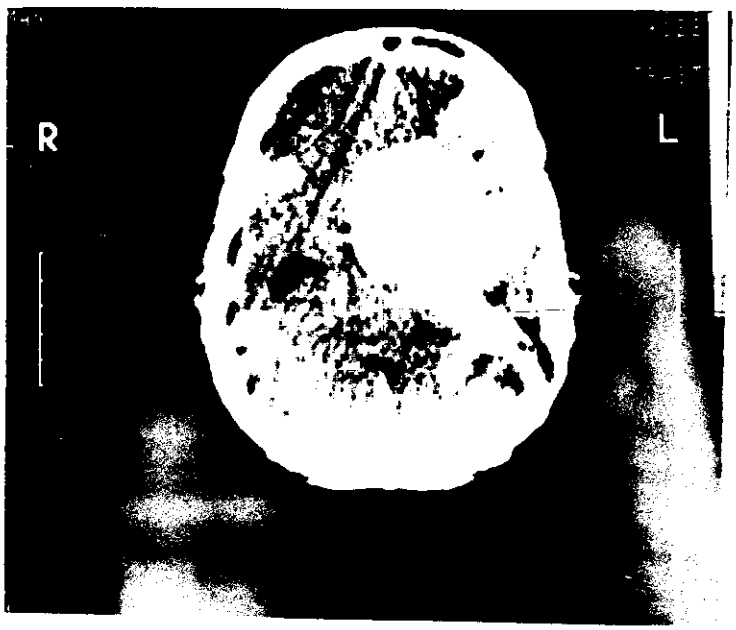


Frontal and lateral projections . Left carotid angiogram, arterial phase .

Case No 6 : cont.

Lateral projection . Left carotid angiogram , venous phase .

C.T. : Homogenous high density mass with distinct, rounded borders .



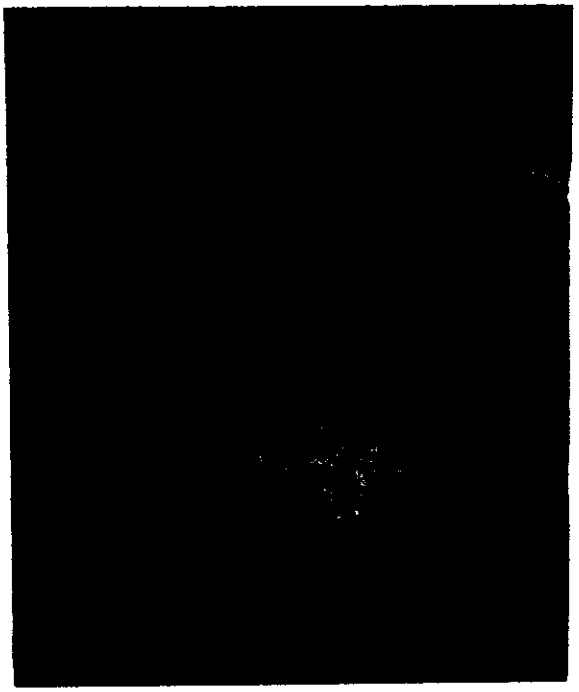
Case No 7 : Frontal Osteoma + Pre-Sylvian Supfrontal Avascular Mass .

Frontal projection . Left carotid angiogram , arterial phase .

Lateral projection . Left carotid angiogram , arterial phase .

Case No . 7 : cont.

Lateral projection
Left carotid angiogram ,
venous phase .



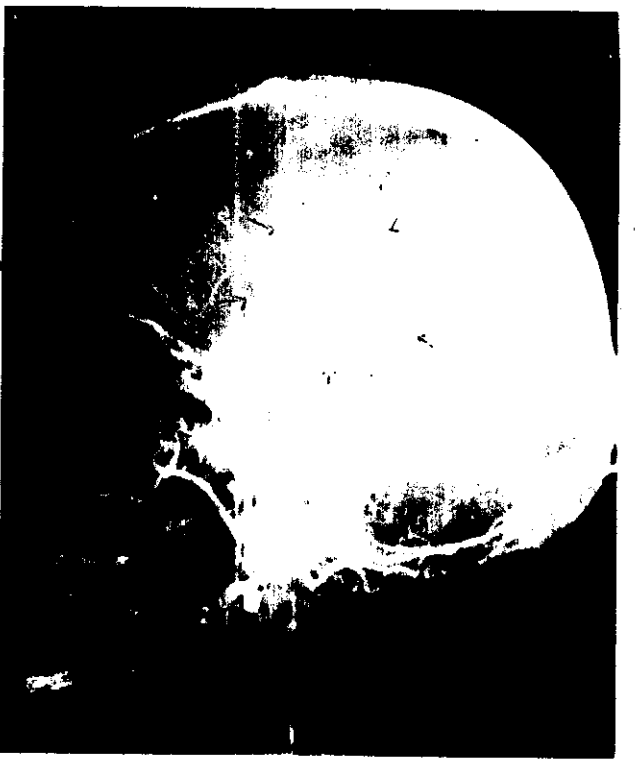
Case No . 8 : Anterior Supr-Sylvian Convexity (Fronto-parietal) Meningioma .

Frontal projection
Left carotid angiogram ,
arterial phase .

Lateral proje
Left carotid a
arterial pha

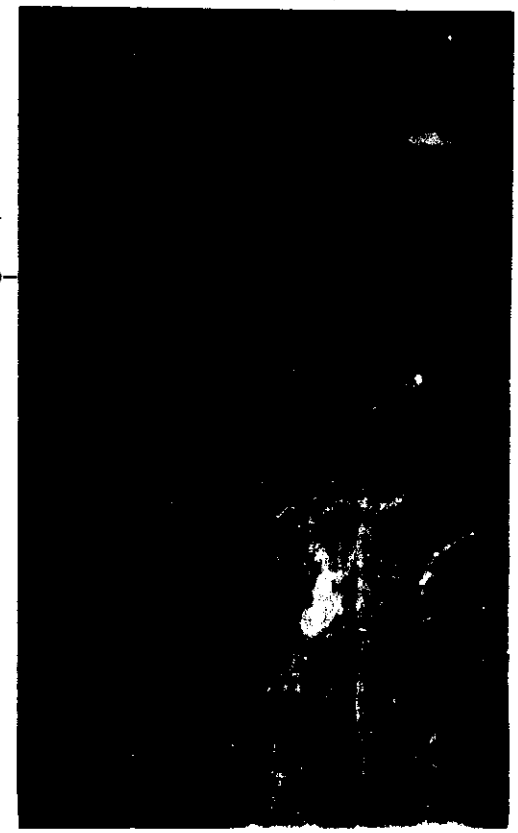
Case No . 8 : cont.

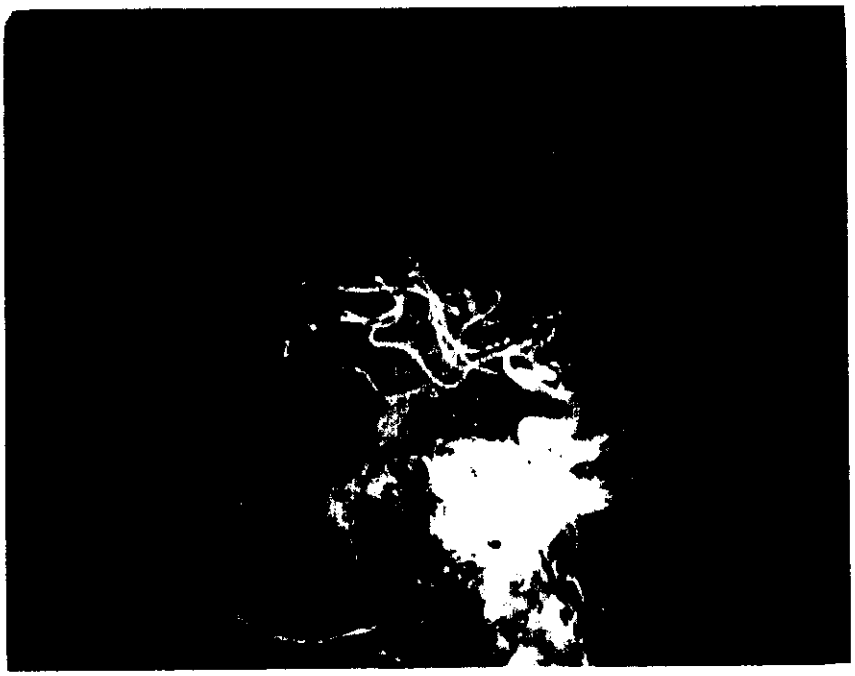
Lateral projection .
Left external carotid angio
gram, arterial phase .



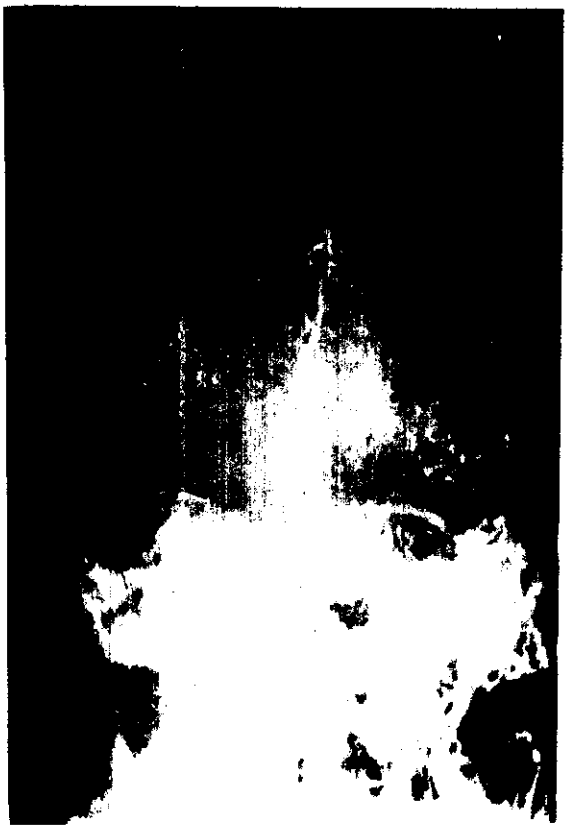
Case No . 9 : Supr-Sylvian Parasagittal Mass .

Frontal and lateral projections . Right carotid angiogram, arterial phase .





Case No . 10 : Supra-Sylvian Parasagittal Mass .



Frontal and lateral projections . Left carotid angiogram, arterial phase .