

# Metastatic Posterior Fossa SOL Secondary to Carcinoma Breast

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## ABSTRACT

**Aim:** To describe our experience with Metastatic Carcinoma (CA) breast in posterior fossa.

**Materials and Methods:** All patients who had history of Carcinoma (CA) breast and had posterior fossa space occupying lesion (SOL) were included in this study. Detailed history, examination and baseline investigations were done and patients were operated on list and are on regular follow up. The duration of study was 2 months and is an ongoing project.

**Results:** Three patients were included in this study. All had previous history of mastectomy for Carcinoma (CA) breast. One had **invasive ductal carcinoma**, other had **ductal carcinoma**. Third one didn't have her previous records with her. All patients presented with SOL in posterior fossa. 1<sup>st</sup> and 2<sup>nd</sup> patient had **undifferentiated carcinoma** and 3<sup>rd</sup> patient had metastatic **differentiated carcinoma** on biopsy of SOL brain. It is interesting to note that 1<sup>st</sup> and 2<sup>nd</sup> patients completed their chemotherapy and radio therapy while the 3<sup>rd</sup> patient didn't consult her surgeon after mastectomy for further treatment.

**Conclusion:** A multidisciplinary approach is recommended for the long term management of patients with Carcinoma (CA) breast and they should be kept on regular follow-up for the rest of their lives.

**Key Words:** Metastatic Breast Cancer, Posterior Fossa SOL, Undifferentiated Carcinoma, Cerebellar SOL, Metastatic Brain Cancer.

**Abbreviations:** CA = Carcinoma, SOL = Space Occupying Lesion, GCS = Glasgow Coma Scale.

## INTRODUCTION

Breast Cancer is the most common cancer among women globally and accounts for 25% of all the carcinomas in women.<sup>1</sup> Metastatic breast cancer is a carcinoma originating from breast tissue that has spread to distant sites beyond axillary lymph nodes.<sup>2</sup> It usually occurs some years after primary breast cancer but can also be diagnosed with primary breast cancer sometimes.<sup>3</sup> No definite cure is available for metastatic breast cancer.<sup>4</sup> Once diagnosed, breast cancer is treated with radiotherapy and chemotherapy. SERMs (selective estrogen receptor modulators) are given in certain cases of post operative CA breast. All these modalities are tried to prevent metastasis of CA breast. 6 – 10% of newly diagnosed breast cancers are metastatic.<sup>5</sup>

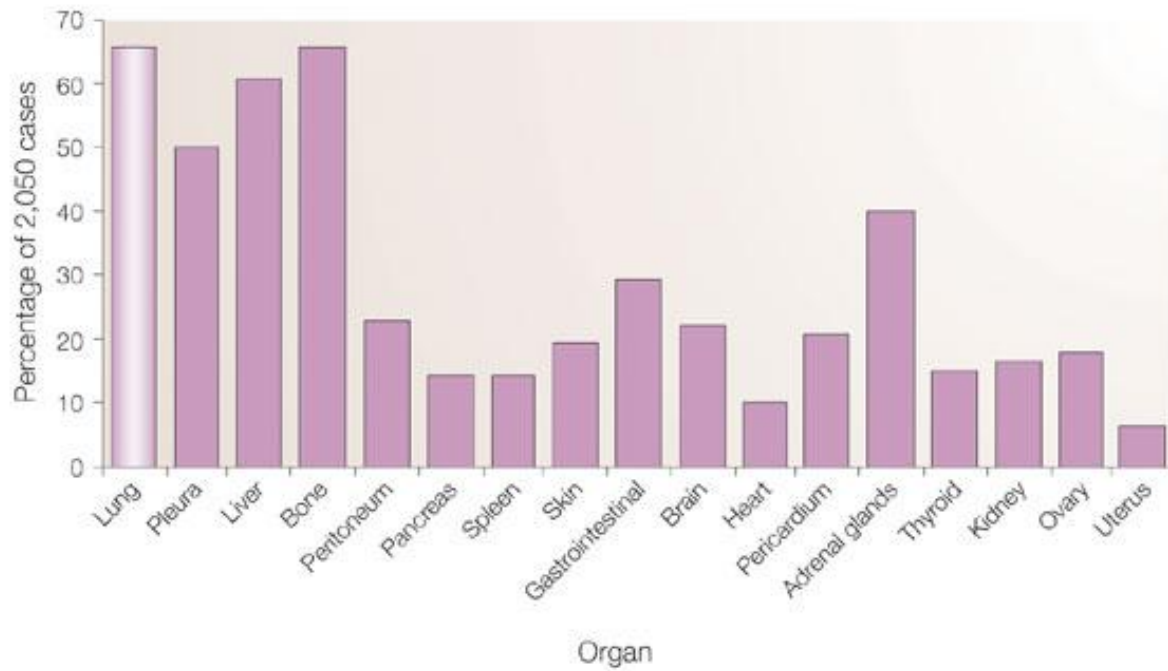
Lungs and bone are the most common sites of metastasis of CA Breast.<sup>6</sup> The most common risk fac-

tors for breast cancer are female sex and increasing age.<sup>7</sup>

## CASE SERIES

### Case I:

A 45 years old female presented to OPD (outpatient department) of General Hospital Lahore in November 2014 with sudden onset headache associated with vomiting for 1 day. The headache was sudden in onset, dull in nature and was associated with nausea and vomiting. On pain scale, she gave it a score of 6/10. She was a diagnosed case of CA Breast (Stage II Invasive Ductal Carcinoma) and had mastectomy and chemotherapy, radiation for it 5 years back. She had discontinued her medications and was not on follow-up of her surgeon. When inquired, she told that she didn't



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Figure 1: Metastatic Breast Cancer, Most common sites.<sup>6</sup>

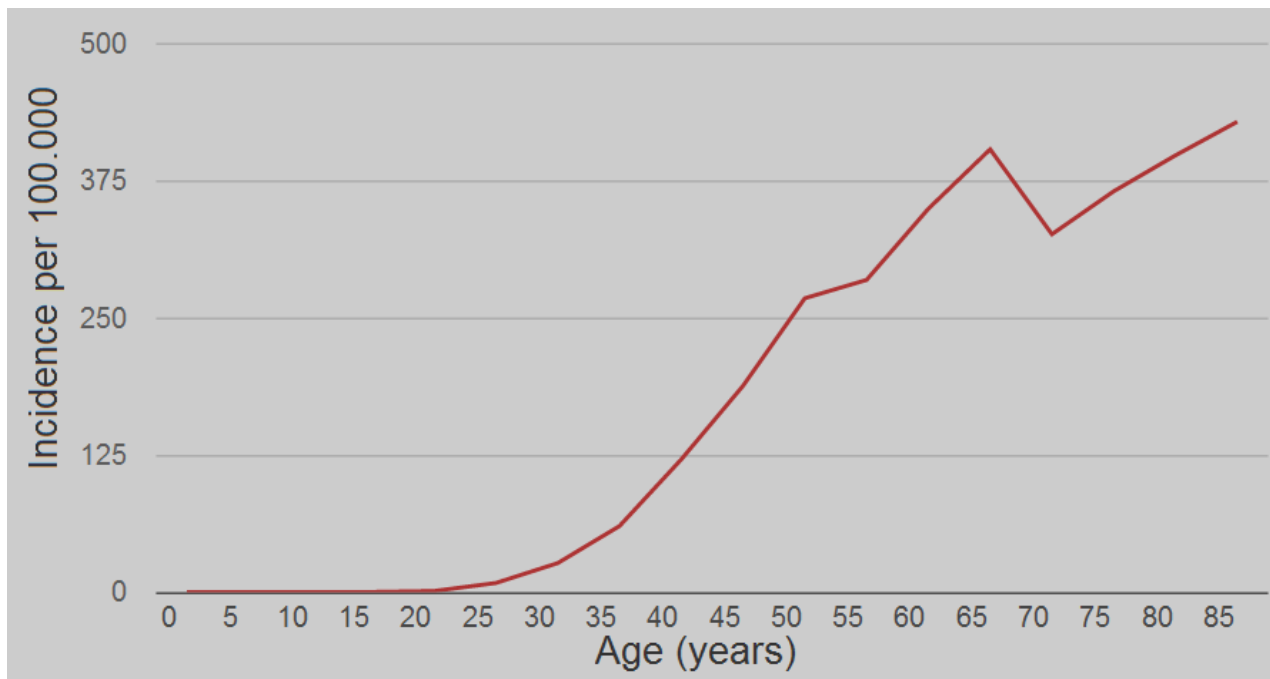
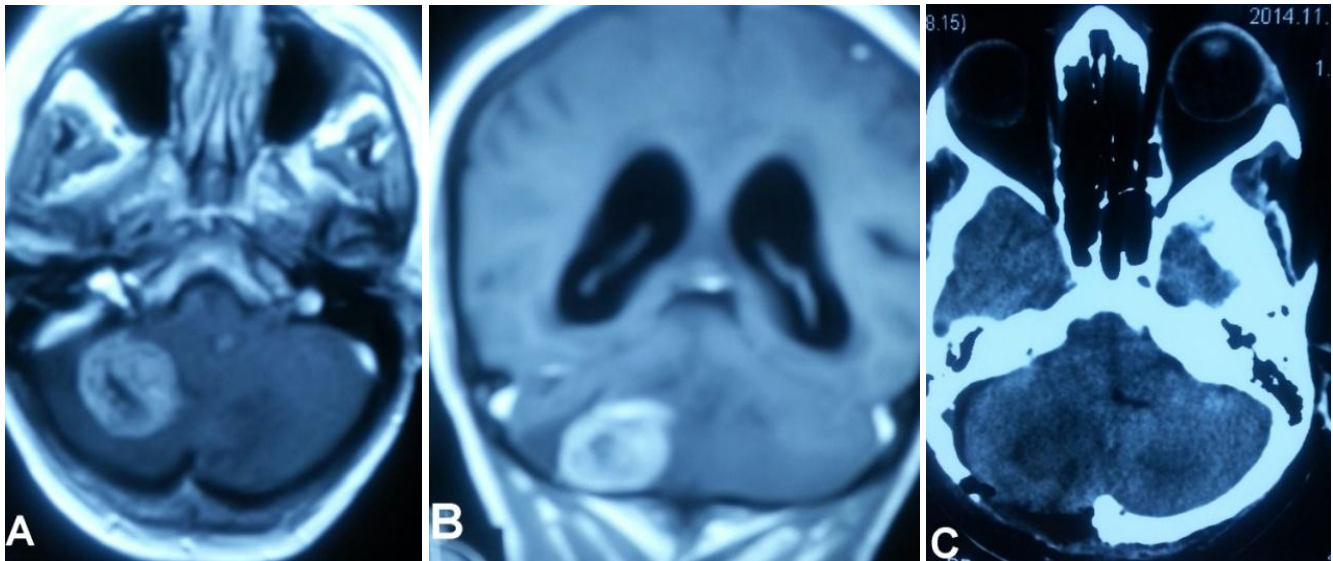
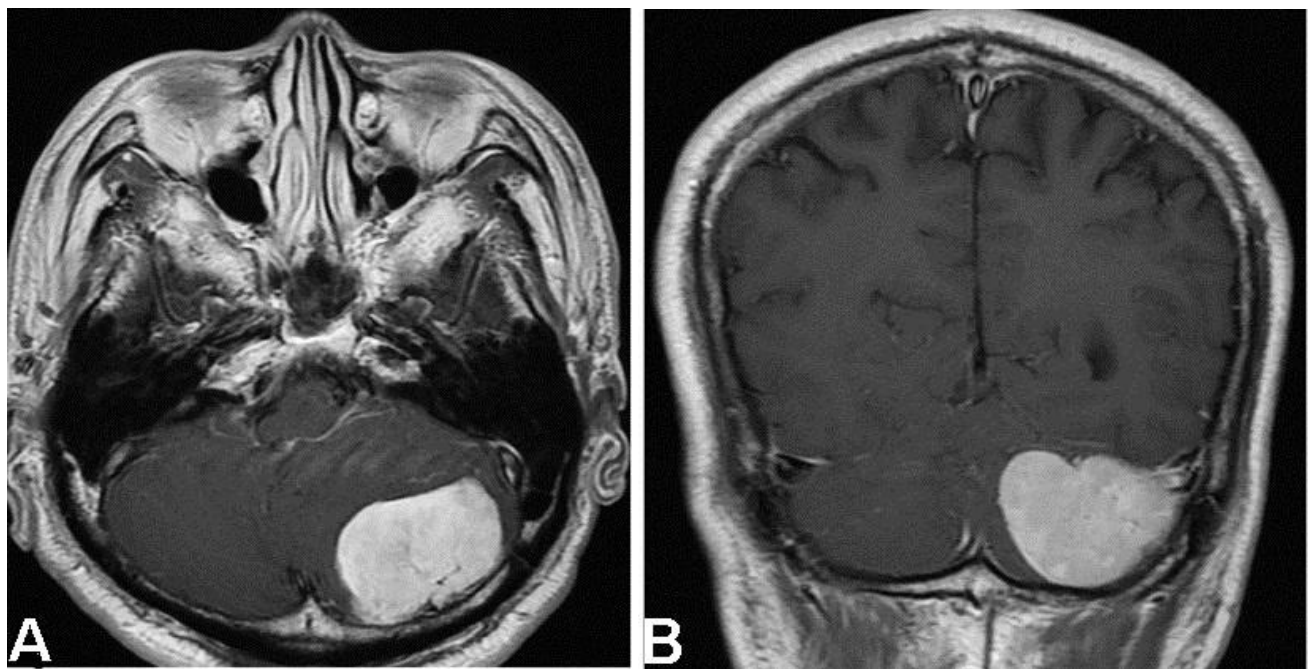


Figure 2: Age Related Incidence of CA Breast in Women.<sup>8</sup>



**Figure 3:** A MRI Brain with Contrast Axial, B MRI Brain with contrast Coronal, C Post Operative CT Scan Brain showing complete tumor excision.

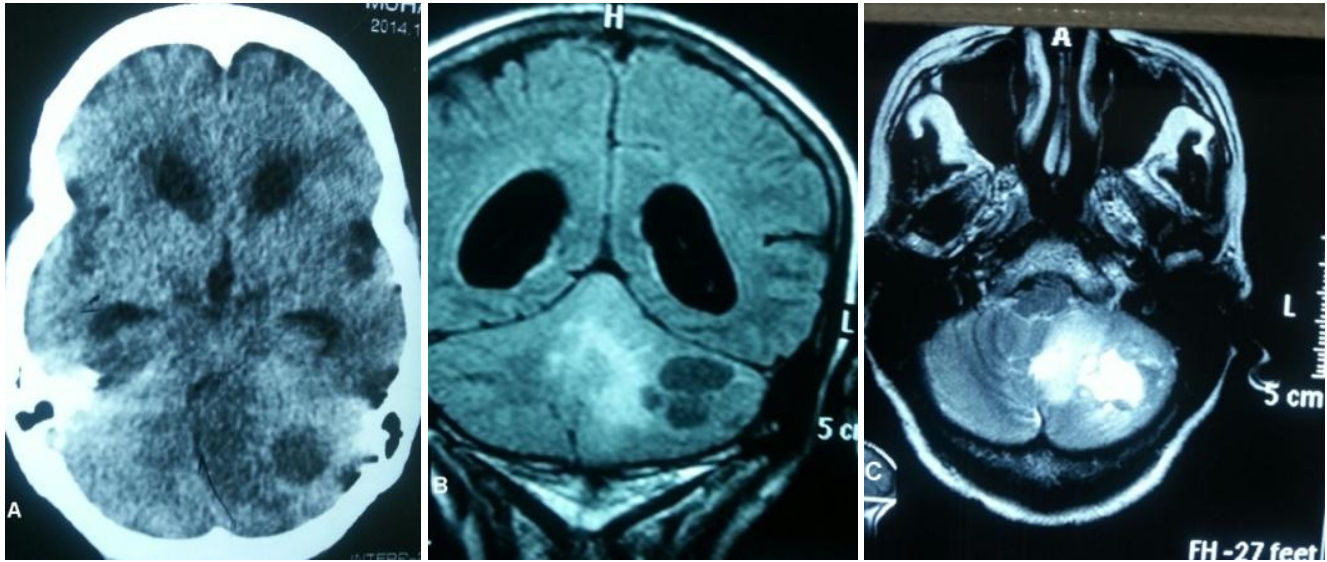


**Figure 4:** MRI Brain showing Left cerebellar SOL.

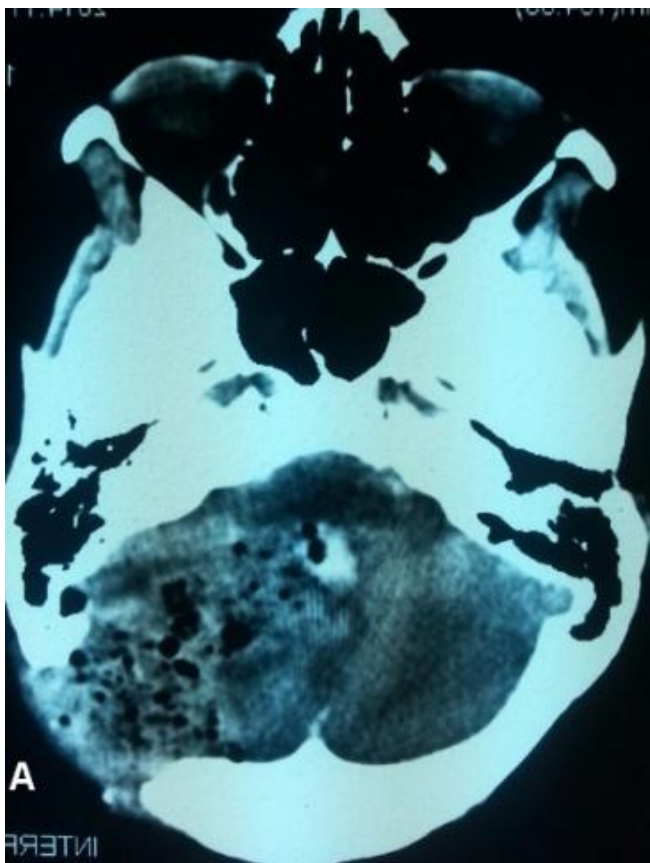
have any problem later on and stopped visiting her surgeon. The family history of CA breast was not significant. There was no family history of any other tumors. Drug history revealed that she took oral contraceptive pills. She was menopausal at time of presentation. On examination, she was conscious, oriented, vitals were within normal range. Pupils were equal and reactive to light. Fundoscopy revealed blurring of

optic disc. There were intentional tremors of right upper limb and past pointing was also positive. Routine baseline was normal. MRI Brain was done which showed SOL in right Cerebellum and also obstructive hydrocephalus.

She was operated within 3 days of her admission. The tumor was completely removed. Patient had a satisfactory recovery post operatively, her symptoms had



**Figure 5:** A Pre OP CT Scan Brain Plain. B MRI Brain Plain. C MRI Brain with IV Contrast.



**Figure 6:** Post op CT Scan of Case III showing re-bleed.

improved and was discharged on 5<sup>th</sup> POD. Now she is on regular follow up.

### Case II

A 40 years old female presented to Emergency Department of LGH in October 2014 with acute onset loss of consciousness. There was history of headaches for last 15 days with vomiting. The presenting GCS was 13/15, her pupils were equal and reactive. The patient was stabilized and shifted to ward. Detailed history revealed that she had been a case of CA breast (Ductal Carcinoma) and was operated 4 years back and had completed course of chemotherapy and radiation. She was no more on follow-up of her surgeon and she had stopped consulting him after completing chemotherapy / radiation. Family history of CA breast and other tumors was not significant. Drug history revealed that she took oral contraceptive pills. She was having irregular periods for last 3 months. A detailed examination was performed once the patient was stable enough. Fundoscopy showed papilloedema and disc atrophy in left eye. Cerebellar signs were positive on left side. Rest of CNS and systemic examinations were insignificant. Routine baseline were sent, tumor work up was done. CT scan brain showed Obliteration of 4<sup>th</sup> ventricle. MRI Brain with contrast was done and it showed SOL in left cerebellum. The patient was operated on elective list, tumor was removed. Patient had satisfactory post operative recovery and was discharged on 6<sup>th</sup> postoperative day. Now she is on regular follow up.

### Case III

Table 2 shows the brief summary of all 3 cases. Forty

two year old female presented to OPD of LGH in October 2014 with history of imbalance. Past history was significant for CA breast which was operated 5 years back. She had history of incomplete radiation therapy and no history of chemotherapy. When asked she said that she felt well and didn't feel it necessary to undergo further treatment. She had no history of follow-up visit and no previous record was available. The active complaint was imbalance which she was experiencing for last one month. One day prior to presentation to LGH she had had 2 episodes of vomiting associated with headache (which she attributed to food). She was immediately admitted. Detailed history revealed nothing significant except mastectomy in the past. Family history was insignificant for chronic diseases and carcinomas. Detailed examination was done. GCS was 15/15, pupils were bilateral equal and reactive to light. Fundoscopy revealed that she had bilateral papilloedema. Cerebellar signs were positive on left side. Base line investigations revealed that she was Hepatitis C positive. Her PT and APTT were deranged and her INR was 1.9. Rest of her investigations were normal. Systemic examination was insignificant. CT scan brain plain was done which showed SOL in pos-

terior fossa causing obstruction of 4<sup>th</sup> ventricle and obstructive hydrocephalus. MRI Brain plain and with contrast were done which showed Left Cerebellar SOL.

The patient was optimized for surgery and was operated on elective list. Complete excision of SOL was done. Pre Operative and per operative Fresh Frozen Plasma (FFPs) were given to the patient. The patient was shifted to ward after she was out of general anesthesia. The patient was received in ward with a GCS of 15/15 and normal vitals. 12 hours after the surgery, the patient suddenly deteriorated. Her GCS became 12/15, pupils were equal and reactive to light. Immediately base line and CT scan was performed. The base line was normal, INR was 1.2 and CT scan showed smaller in the surgical area. The patient was managed conservatively and her neurological status improved gradually. On 7<sup>th</sup> post operative day, her GCS was back to 15/15 and she was allowed oral. She was discharged on 12<sup>th</sup> post operative day and is on regular follow up. The biopsy report showed Metastatic Differentiated Carcinoma.

The biopsy reports of the cases are below (Table 1).

**Table I:** *Biopsy Reports of all cases.*

Patient No	Biopsy of Breast	Site of SOL Brain	Biopsy of SOL Brain
1.	Invasive Ductal Carcinoma	Right Cerebellum	Undifferentiated Carcinoma
2.	Ductal Carcinoma	Left Cerebellum	Undifferentiated Carcinoma
3.	No Record	Left Cerebellum	Metastatic Differentiated Carcinoma

**Table 2:** *Summary of 3 patients.*

Patient No.	1	2	3
Primary Surgery	5 Years	4 years	5 years
Presenting Complaint	Headache + Vomiting	Sudden Loss of consciousness	Imbalance
Post Mastectomy	Chemo Radiation	Chemo Radiation given	No Treatment
Follow up	6 Months post mastectomy	6 Months post mastectomy	No follow up
Family History	Insignificant	Insignificant	Insignificant
Menopause	Yes	Yes	Yes
Chronic Disease	No	No	Chronic Liver Disease +ve
Base Line	Normal	Normal	Deranged LFTs and Bleeding Profile

<b>Mode of Admission</b>	OPD	Emergency	OPD
<b>CNS Findings</b>			
<b>GCS</b>	15/15	13/15	15/15
<b>Pupils</b>	Equal and Reactive		
<b>Fundoscopy</b>	Blurring of optic disc	Papilloedema + Disc Atrophy in Lt Eye	Bilateral Papilloedema
<b>Examination</b>	Intention Tremor, Past Pointing	Nystagmus, Intention Tremor, Past pointing, High Stepping gait	Nystagmus, Dysmetria, past pointing, ataxia
<b>Post Operative Hospital Stay</b>	5 Days	6 Days	12 Days
<b>Post Operative Complication</b>	None		Rebleed in surgical Site. Conservatively Managed

**DISCUSSION**

The 5 year survival rate for Primary Breast cancer is 100% in stage I, 85% in stage II and 39% in stage III.<sup>9</sup> The cause of death from breast cancer is most commonly due to distant metastasis.<sup>10</sup> 5 year survival rate is 23% in case of distant metastasis.<sup>11</sup> Metastasis is a multistep process including local invasion, detachment from the primary tumor, intravasation, and survival in the circulation, extravasation, and establishment of a distant lesion.<sup>12</sup> Breast cancer can metastasize anywhere in body but primarily metastasizes to the bone, lungs, regional lymph nodes, liver and brain, with the most common site being the bone.<sup>13</sup> Brain metastasis is seen in 10% of Stage IV breast carcinomas.<sup>14</sup> The primary pathophysiology of the symptoms is mass effect of the tumor which is same as in case of primary brain tumors. The metastatic brain tumors usually invade the grey – white matter junction of CNS. For solitary lesions, surgical excision is the choice of therapy. For multiple lesions, other modalities must be considered. Posterior fossa is a very rare site for CA breast metastasis accounting for only 10% of metastatic breast tumors.

In Pakistan, the burden of breast cancer is on the rise. The most common age is 45 – 50 years<sup>16</sup>. Most of the women don't visit their primary physician till it's too late. Approximately 40% of patients are in stage IV at the time of presentation.<sup>15</sup>

**CONCLUSION**

The number of metastatic brain tumors is alarmingly high in Pakistan, as compared to western statistics in which only 10% of patients are in stage IV. Despite

having cancer treatment facilities in major cities, we are unable to treat a treatable condition. Lacking a complete treatment, the patient presents later on with distant metastasis. **The main reason is lack of patient education.** Women are too afraid to discuss such matters. Some burden also falls on shoulders of the treating surgeon. Immediately after surgical excision of primary breast tumor, it is recommended that patient should be kept on regular follow up for the rest of her life and international standards should strictly be followed. A multidisciplinary approach is recommended.

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