CASE REPORT

An interesting case of screen-detected breast cancer encasing a ventriculoperitoneal shunt

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SUMMARY

A 67-year-old woman was diagnosed with a breast cancer via screening encasing the ventriculoperitoneal shunt. Triple assessment including MRI scan of the breast confirmed the presence of a breast mass and the tubing of the ventriculoperitoneal shunt was running directly through the mass. She underwent wide local excision of the breast cancer as well as rerouting of VP shunt as a joint procedure with the neurosurgery team and recovered uneventfully. This is a very rare and an interesting case and required management involving a different specialty.

BACKGROUND

In the Western world, breast cancer is commonly diagnosed via screening in women aged 50–70 years. Insertion of ventriculoperitoneal (VP) shunt is a very common surgical procedure in neurosurgical units for the treatment of hydrocephalus and it is very rare to find a small breast cancer encasing the VP shunt. We present this interesting case where a small breast tumour encircled the VP shunt and was diagnosed via routine screening mammogram.

CASE PRESENTATION

We report an interesting case of breast cancer in a patient with VP shunt. This 67-year-old woman attended the breast screening unit and was found to have a mass lesion in the upper inner quadrant of the right breast around a VP shunt. Her medical history included posterior fossa craniectomy and near total removal of a fourth ventricular tumour in December 2005 for low-grade ependymoma (grade II) and required endoscopic third ventriculostomy for cerebrospinal fluid leak in the post-operative period and later on right VP shunt for enlarged ventricles. She also had radiotherapy to the brain tumour area in the postoperative period. She was also taking medications for hypertension and osteoporosis. There was no history of breast or ovarian cancer in her family.

INVESTIGATIONS

Right mammogram showed a suspicious small mass lesion in the upper inner quadrant of her right breast which was confirmed as an irregular suspicious mass on ultrasound scan (figure 1). MRI scan showed the presence of a 16 mm irregular mass in the upper inner aspect of the right breast and the tubing of the VP shunt was running directly through the mass (figures 2 and 3). The mass enhanced avidly following the administration of

intravenous gadolinium and the findings were consistent with a carcinoma. Ultrasound-guided cytology of the breast mass showed malignant cells consistent with breast carcinoma (C5).

DIFFERENTIAL DIAGNOSIS

Although commoner diagnosis in women aged 67 years would be a breast cancer, a benign tumour-like fibroadenoma are frequently diagnosed in this age group. Other differential diagnosis will include fat necrosis within the breast presenting as a mass. Rarely, sarcoma and chronic granulation mastitis could present as a breast mass in this age group.

TREATMENT

She underwent right breast-wide local excision, sentinel node biopsy and rerouting of VP shunt under general anaesthesia as a joint procedure with the neurosurgeon on 25 April 2012. A curve incision was made in the upper inner quadrant of the right breast over the palpable lump and the tumour was dissected out. The shunt was going right through the tumour and this was removed and rerouted by the neurosurgeon.

Figure 1 Right mammogram showing ventriculoperitoneal shunt encasing the breast mass.

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Figure 2 MRI showing ventriculoperitoneal shunt encasing the breast mass.

OUTCOME AND FOLLOW-UP

The final histology reported as a grade I, infiltrating carcinoma measuring 13 mm (NPI 2.6) without any evidence of lympho-vascular invasion with complete excision and no evidence of axillary lymph node involvement. Oestrogen receptor was 8 (quick score), progesterone receptor was 7 and Her-2 was negative. She made an uneventful postoperative recovery and the VP shunt was functioning well after surgery. She also had adjuvant radiotherapy to breast and has been recommended hormonal treatment for 5 years.

DISCUSSION

Although VP shunt is one of the most common surgical procedures performed by neurosurgeons worldwide, a breast cancer involving VP shunt is very rare, and on literature search, only three articles about VP shunt involving breast cancer were found; one from Nepal, second from New York and third from London.

Figure 3 MRI right breast showing enhancing breast mass encasing ventriculoperitoneal shunt.

In the case report from Nepal, breast cancer caused mechanical obstruction¹ of the distal catheter. The patient presented with symptoms attributed to mechanical blockage of the shunt catheter. The shunt valve was not compressible leading to the diagnosis of distal obstruction and clinical examination revealed the presence of a large mass in the upper inner quadrant of the right breast. Intraoperatively, the shunt was found traversing through hard breast lump causing a small angulation, distally. This was not the case in our patient though it is likely that it could have caused the mechanical obstruction in future if she did not attend for breast screening.

The second case report from New York was an 88-year-old woman with multicentric² lobular breast cancer involving VP shunt but there was no mechanical obstruction and she underwent needle localised partial mastectomy of calcifications and excision biopsy of the mass around the VP shunt. This patient should have undergone a mastectomy, but because of the patient's medical history including dementia, a decision was taken to remove the mass around VP shunt only and not mastectomy. Our patient had a small solitary breast cancer in the upper inner quadrant around the VP shunt, and therefore was deemed suitable for conservation surgery.

The third case report from London had a 52-year-old woman who presented with a large 5 cm lump in the subareolar region and had a history of VP shunt and underwent modified radical mastectomy.³ The breast cancer itself was not encasing the VP shunt but as she needed a mastectomy, a careful dissection around the VP shunt catheter was required to avoid injury.

The management approach was different in our case. Following screening mammogram and ultrasound, it is our usual practice to perform core biopsies for the confirmation of diagnosis, but in this particular case, MRI scan was arranged for clarification before a biopsy. MRI scan confirmed the presence of a carcinomatous mass in the upper inner quadrant of the right breast, encasing the tubing of the ventriculoperitoneal shunt. Following MRI, fine needle aspiration cytology, rather than core biopsy, was performed under ultrasound to avoid damaging the VP shunt. Also, the treatment involved joint care involving the breast surgeon and the neurosurgeon to reroute the shunt.

We conclude that though the occurrence of a breast mass in the presence of a VP shunt may be relatively rare, the possibility of the mass encasing the shunt should always be considered. The need for adequate radiological investigations is strongly emphasised, so as to avoid iatrogenic shunt fracture. Collaboration with the neurosurgical service in such a case is the key to a successful outcome.

Learning points

- ▶ MRI scan of breast is a very useful investigation for the definition of breast tumour in complex cases.
- ▶ We normally require core biopsies for the confirmation of diagnosis preoperatively, but in this case, only fine needle aspiration cytology was accepted rather than core biopsies to avoid iatrogenic injury to ventriculoperitoneal (VP) shunt.
- ▶ As the VP shunt was encased by breast tumour, neurosurgical team was involved during surgery to deal with rerouting of the VP shunt.

Competing interests None.

Patient consent Obtained.

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