

Mammography and Breast Surgery May Damage Ventriculoperitoneal Shunts: Case Report

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Citation

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Abstract

This is a case of a cerebrospinal fluid pseudocyst in the breast caused by a ruptured VP shunt. There were few similar cases mentioned in the medical literature. A 70 year old female presented with a one-month-old growing mass in the left breast. She had a cyst removed from the same breast 3 months before that. CT thorax showed a 4.3 cm fluid mass at the tip of a disconnected ventriculoperitoneal (VP) shunt in the subcutaneous fat of the left breast. CT brain showed mild dilatation of the ventricles. The shunt was surgically replaced. We postulated this was an iatrogenic complication of mammography or breast surgery. We recommend such patients when undergoing mammography or any invasive procedure on the breast tell the technician or the doctor performing the procedure about their shunt so as to avoid damaging it.

INTRODUCTION

Ventriculoperitoneal (VP) shunt is placed in cases of hydrocephalus, where the ventricles of the brain become enlarged. This condition causes the brain tissue to become compressed against the skull, thus causing serious neurological problems. VP shunt is a small tubing system that is placed inside the brain's ventricle and tunneled underneath the skin to the peritoneum. The cerebrospinal fluid (CSF) is shunted from the ventricles of the brain into the abdominal cavity.

Many types of shunts are available; they vary slightly and generally have at least 3 parts. The first part is the ventricular catheter, which goes into the brain. The second part is the valve. It controls the pressure within the brain. The third part is the distal catheter. It is tunneled under the skin of the scalp, neck, chest, and into the peritoneal cavity. A reservoir is used to test the shunt and get fluid with a needle if ever needed. It can be felt as a small bubble, about the size of dime, under the scalp. The reservoir and valve are close to each other.

For the most part, shunts function well. However, there are complications that can occur. The common complications associated with ventriculoperitoneal (VP) shunts are disconnection, obstruction, shunt infection with ventriculitis and shunt migration.

A known but rare complication is CSF pseudocysts caused

by rupture or fracture of the VP shunt. The frequency of abdominal CSF pseudocyst formation is approximately 3.2%, often being precipitated by a recent inflammatory or infective process or recent surgery [1] and can be recurrent [2, 3]. Another location for such pseudocysts reported recently in the medical literature is the breast. In 2002, Kalra N et al. reported two such cases with their mammography and ultrasound findings [4]. In 2003, Vimalachandran D et al. reported the case of a 39 year old lady presenting with a right breast lump due to fracture of a calcified VP shunt [5]. In 2005, Spector JA et al. reported a unique case of an abrupt right breast CSF pseudocyst formation 6 weeks after placement of a VP shunt in a lady with bilaterally augmented breasts [6]. In 2006, Iyer HP et al. reported the most recent case of this kind [7].

CASE

A 70-year-old woman was admitted because of a one-month-old growing mass in the left breast. She had a cyst removed from the same breast 3 months before that. Medical history included hyperthyroidism, bladder incontinence, anxiety, depression, stroke, hypertension and arthritis. There was a family history of colon cancer and heart disease. Interview revealed recent memory loss and sleepiness. Physical exam showed a fluctuant mass in the left chest wall, shortness of breath, swelling of feet and difficulty walking.

CT thorax showed a separation of 2.5 cm in the VP shunt tube associated with a 4.3 cm fluid mass at the tip of the

disconnected shunt in the subcutaneous fat of the left breast. CT brain showed mild dilatation of the ventricles – a sign of shunt malfunction. The shunt was surgically replaced. There was big improvement in mental status after that.

Figure 1

Figure 1: Ct Brain, Transverse View: Mild dilatation of ventricles. Seen is the tip of VP shunt

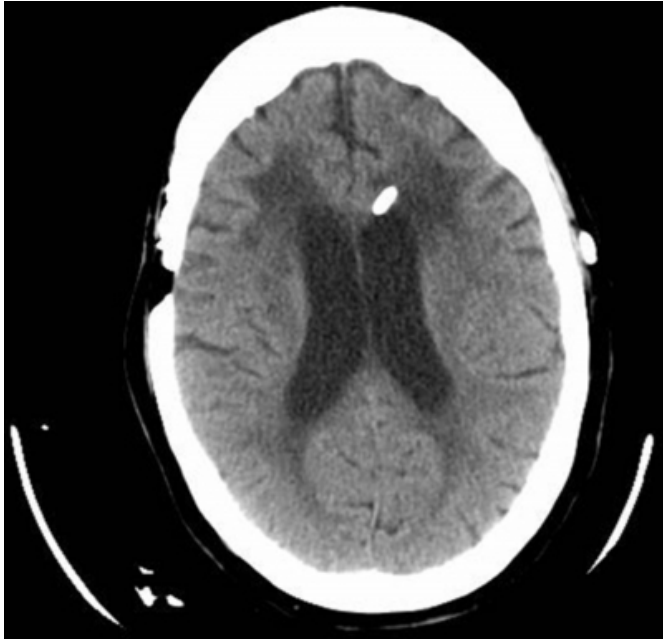


Figure 2

Figure 2: CT Thorax, Transverse View: A 4.3 cm fluid mass at the tip of the disconnected shunt in the subcutaneous fat of the left breast

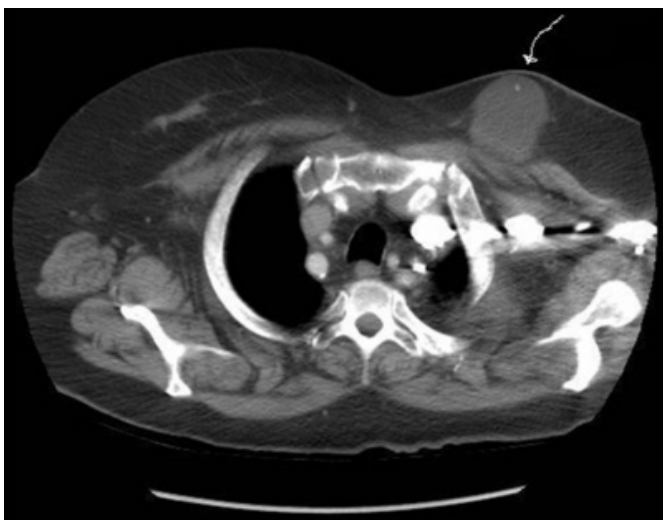


Figure 3

Figure 3: CT Thorax, Frontal View: A 4.3 cm fluid mass at the tip of the disconnected shunt in the subcutaneous fat of the left breast



DISCUSSION

VP shunt systems include several components in sequence that provides a continuous pathway for CSF flow from the ventricle in the brain to the peritoneal space in the abdomen. Disconnection between elements of the ventriculoperitoneal shunt system results in increased intracranial pressure and may manifest itself as a lump anywhere on its route. These are called pseudocysts because they are just a localized accumulation of CSF without a real cyst wall.

Symptoms of increased intracranial pressure usually are headache, drowsiness and loss of some mental and physical abilities [8]. Our patient reported sleepiness, difficulty walking and memory loss which fits into the picture of shunt malfunction.

The breast lump grew over a month; which meant the patient started feeling it two months (8 weeks) after breast surgery. In the case of Spector JA et al. (2005) the abrupt formation of breast CSF pseudocyst was, similarly, diagnosed 6 weeks after VP placement.

We postulated this was most probably an iatrogenic complication of mammography or breast surgery. VP shunts run subcutaneously downwards on the patient's chest just right or left of midline. Women age 40 and older have mammograms done every 1 to 2 years. Compressive force is applied to the breast during that procedure in order to even

out the tissue, to hold the breast still and to increase image quality. This could have caused the rupture of VP shunt in the breast region. Otherwise, the VP shunt could have been damaged during the breast surgery our patient had 3 months before presenting with a breast cyst. Protecting the shunt has to be on the mind of the surgeon operating on the breast of a patient with a VP shunt and the shunt should be factored in breast sculpture. Surgeons should take this into consideration when making their incisions to minimize trauma to the tube during the operation [9].

CONCLUSION

CSF pseudocysts should be part of the differential diagnosis of breast masses in patients with ventriculoperitoneal shunts. We recommend such patients when undergoing mammography or any invasive procedure on the breast tell the technician or the doctor performing the procedure about their shunt so as to avoid damaging it. And surgeons should be aware of the possibility of trauma to the shunt during surgery to minimize chances of injuring the tube.

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