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Olgu Sunumu / Case Report

Hydrothorax Development after Ventriculopleural Shunt in a Patient with Peritoneum Absorption Dysfunction

Periton Absorbsiyon Bozukluğu Olan Bir Hastada Ventrikülоplevral Şant Operasyonu Sonrasında Gelişen Hidrotoraks

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ABSTRACT

Although hydrocephaly has been recognized for years, its treatment and follow-up remain obscure. Ventriculoperitoneal shunt application is the most common treatment used in recent years. However, revision incidence and mortality are very high due to infection, overdrainage or underdrainage, and obstruction. 62 years old female patient was operated and ventriculopleural shunt performed in our clinic. Fifth day after operation persistant dyspneic complaints exists. Chest graphia performed and bilateral pleural effusion was seen. In this report, we present a case of hydrothorax after ventriculopleural shunt operation. Ventriculopleural shunting was preferred in this patient because peritoneal absorption disorder developed after recurrent ventriculoperitoneal shunt operations and revisions. The tension hydrothorax that developed is discussed in light of the relevant literature.

Key Words: Ventriculoperitoneal Shunt, Ventriculopleural Shunt, Hydrothorax

ÖZET

Hidrosefali yıllardan beri bilinen bir hastalık olmasına rağmen takip ve tedavisinde halen bilinmeyen noktalar bulunmaktadır.Hidrosefali tedavisinde alen ventriküloperitoneal şant cerrahisi en sık kullanılan tedavi yöntermidir. Ancak revizyon insidansı ve mortalitesi; enfeksiyon, fazla/az drenaj tıkanma nedeniyle oldukça yüksektir. 62 yaşında bayan hasta kliniğimizde opere edilerek ventrikülоplevral şant uygulandı. Ameliyat sonrası beşinci günde hastada ilerleyici tipte nefes darlığı ve siyanoz şikayetleri ortaya çıktı. Hastanın çekilen akciğer grafisinde solda plevral effüzyon tespit edildi.. Ventrikülоplevral şant cerrahisi rekürren ventriküloperitoneal şant operasyonları ve revizyonları sonrası görülebilen peritoneal absorbsiyon bozuklukları nedeniyle tercih edilmektedir. Bu raporda ventrikülоplevral şant sonrası gelişen tansiyon hidrotorakslı bir olgu sunulmuş ve literatür eşliğinde tartışılmıştır.

Anahtar Kelimeler: Ventriküloperitoneal Şant, Ventrikülоplevral Şant, Hidrotoraks

INTRODUCTION

Hydrocephaly is a finding seen in various pathologies or disorders; its prevalence is reported as between 1-1.5%[1]. Hydrocephaly was first defined by Severino[2].

Hydrocephaly can appear in any pathology disturbing the circulation, absorption and production of cerebrospinal fluid (CSF). It is generally characterized by an increase in CSF pressure and widening of ventricles. Widening of the ventricles without change in CSF pressure may sometimes occur (hydrocephaly with normal pressure, or Hakim-Adam's syndrome)[3]. Ventriculoperitoneal shunt application is the most common treatment; however, incidence of revision

remains high. In this case, peritoneal absorption disorder developed due to multiple ventriculoperitoneal shunt operations and revisions.

CASE REPORT

The patient was operated ten years before for hydrocephalus with normal pressure, since which time five ventriculoperitoneal shunt reoperations and three shunt revisions had been applied. The patient admitted to our clinic six months following the last operation with consciousness and nausea/vomiting complaints. Ventricular dilatation and shunt dysfunction were determined on computerized tomography (CT) scans (fig1). The existing ventriculoperitoneal shunt was removed and a ventriculopleural shunting operation was performed (fig 2). Ventriculoatrial shunting was not preferred due to the patient's cardiac problems. The nausea and vomiting complaints fully resolved after the operation, but difficulty in breathing and cyanosis developed on the postoperative fifth day. Hydrothorax was determined in the plain radiograph, and thoracentesis was performed (figs 3-4). The patient was evaluated as a tension hydrothorax case due to the ventriculopleural shunting operation.

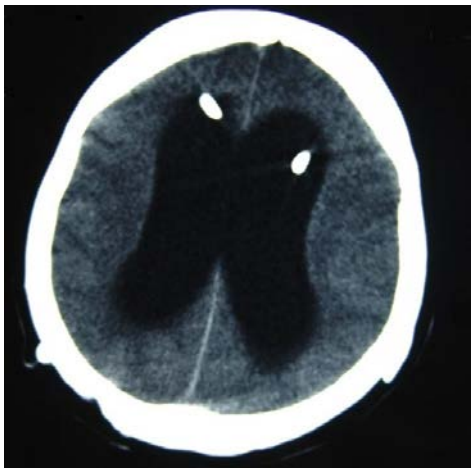

Figure 1. Computerized tomography shows ventricular dilatation and shunt images at the frontal horn.

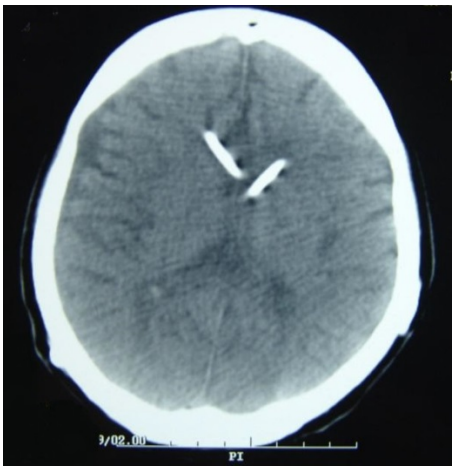

Figure 2. Computerized tomography shows ventricles in normal width and shunt images at the frontal horn.

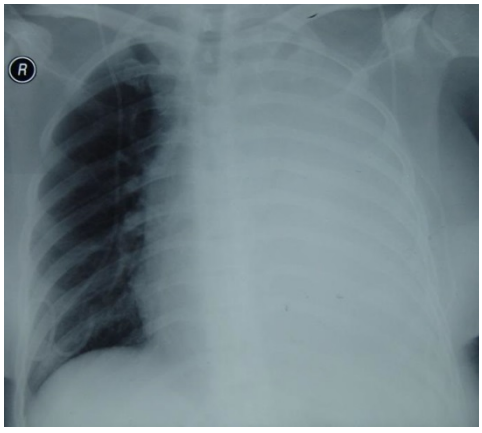

Figure 3. Hydrothorax at the left lung and bilateral shunt images can be seen in posteroanterior lung direct radiography.

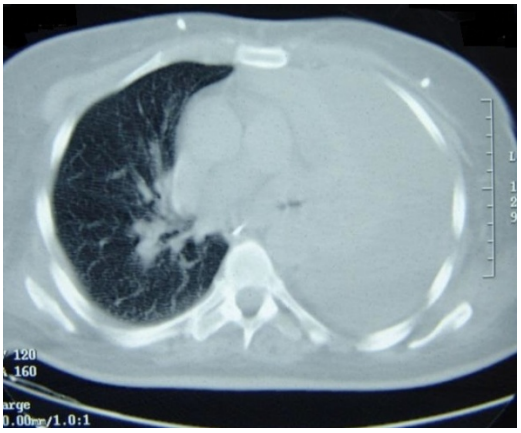

Figure 4. Hydrothorax appearance in the left lung on thorax computerized tomography.

DISCUSSION

Hydrocephaly is encountered following changes in pathophysiology of the CSF, resulting sometimes in widening of ventricles, sometimes in an increase in pressure and sometimes in normal pressure, and it produces different clinical diagnoses[4]. Hydrocephaly etiology can be examined by dividing into two varieties[5,6].

The first, congenital hydrocephaly, can be found in early childhood, and includes Chiari malformation, meningomyelocele, aqueduct stenosis, and Dandy-Walker malformation[7,8].

The second form, acquired (secondary) hydrocephaly, can result from infections or tumors and includes posthemorrhagic- and postoperative-developing hydrocephalus. In suspicious cases based on width of ventricles and observations of CSF flow in the presence of periventricular edema on brain CT and magnetic resonance imaging (MRI), spot measuring of the ventricular pressure or monitoring can be achieved on cine-MR[9,10].

Various methods in the treatment of hydrocephaly have been attempted historically, among themanastomosing CSF to the sinuses for drainage and trials of medical treatment to reduce production of CSF. With the help of reservoir and catheter, the draining of CSF to the pleura (ventriculopleural shunt), to the atrium, and to the peritoneal cavity (ventriculoperitoneal shunt) are the most common methods[11-13].However, shunt revision may be required as a result of shunt infection, overdrainage, underdrainage, or clogging. Peritoneal absorption disorder was determined in our patient who had undergone multiple ventriculoperitoneal shunt operations and revisions for various reasons. As the first option, ventriculopleural shunt was applied in our case, who also had cardiac problems. Upon the patient's increasing complaints of difficulty in breathing and cyanosis on the postoperative fifth day, after resolution of complaints in the early postoperative period, posteroanterior lung radiograph revealed hydrothorax, and thoracentesis was performed.

In conclusion, ventriculoperitoneal shunt is the current and most common treatment of hydrocephaly. However, peritoneal clogging due to repeated abdominal interferences and subsequent absorption disorders may develop. In such situations,ventriculopleural shunt can be applied to the patients as an option. Although it is not suitable in the pediatric age group because of limited pleural absorption capacity, it is a suitable option in adults. Tension hydrothorax developing after ventriculopleural shunt operation is rarely reported in the literature, and we suggest that the possibility of its development after this procedure should be kept in mind.

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