

Headache after Intrathecal Catheter - Subcutaneous Access Port Insertion for Cancer Pain Treatment – Case Report

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ABSTRACT

Approximately 5-15% of cancer patients experience severe pain (6-10 based on VAS) that is resistant to traditional analgesic therapies. For this patient selective interventional analgesic treatment, options must be considered. The Polyanalgesic Consensus Conference panel of experts made the recommendations on use of intrathecal analgesics based on preclinical trials and clinical experiences. On the other hand, intrathecal drug delivery by the implantable pump or subcutaneous port-catheter can be complicated with PDPH. In these cases, EBP is needed if conservative treatment failed.

We are presenting a case report of PDPH after intrathecal catheter-subcutaneous access port insertion. The patient was a 45 years old male with melanoma, unknown primary site. As a result of metastatic spread in ribs, both lungs and thoracic vertebrae patient experienced respiratory insufficiency during exercise and severe pain in chest and chest cavity. For pain treatment patient needed in high dose opioids constantly and for optimization intrathecal catheter-subcutaneous port had been inserted on the L3-4 level. The morphine dose titrated and 4 mg/24 h intrathecal injection was sufficient for pain relief without respiratory depression. On the second day after portcatheter implantation patient felt severe frontal headache. PDPH diagnosed but conservative treatment with bed rest, fluids and caffeine intake was not helpful.

Epidural blood patch performed on the level below the catheter insertion. PDPH relieved temporarily and repeated EBP was needed for successful pain treatment. After this there were no problems of intrathecal port-catheter functioning and specific pain treatment.

We are concluding that intrathecal catheter – subcutaneous access port system is a useful method for terminally ill cancer patient pain treatment with special needs. Like other intrathecal interventions, it can be complicated with PDPH. For treatment of this complication, EBP is helpful if conservative treatment failed.

Keywords

Cancer, Pain, Intrathecal Catheter, Headache, Epidural Blood Patch.

Introduction

Spinal interventions are widely used for refractory cancer pain treatment but they are associated with some adverse effects, including post-dural puncture headache (PDPH) which is a major

complication of lumbar puncture. It can occur following spinal anesthesia, spinal injections, implantation of spinal drug delivery systems and with inadvertent dural puncture during epidural anesthesia. Epidural blood patch (EBP) is considered the treatment of choice for moderate and severe PDPH, with success rates of 61–98% [1].

Implantation of intrathecal drug delivery systems are frequently

associated with PDPH [2]. Opposite to this in literature we have not found the information about the PDPH after subcutaneous port- intrathecal catheter implantation. Some authors suggests that intrathecal catheter placement can reduce the incidence of PDPH but mechanism by which subarachnoid catheter prevents PDPH is not well known and effectiveness of intrathecal catheterization for PDPH treatment is questionable [3]. However intrathecal catheter placement in some cases of inadvertent dural puncture can diminish the need in EBP but other authors could not found any benefit by this method [4]. However, like other spinal interventions intrathecal port-catheter placement can be complicated with PDPH and treatment options for this complication must be considered.

Case Report

This is a case of 45 years old male with metastatic melanoma, unknown primary site. Metastatic lesion were in both lungs, ribs and thoracic vertebral bodies. Patient experienced respiratory insufficiency during exercise and severe pain (8-9 visual analog scale of pain - VAS) in chest and chest cavity. For pain treatment he was needed in morphine injections 40 mg /4h but it was related to significant respiratory depression (respiratory rate – 10).

For optimization of pain treatment, we had decided to implant the intrathecal port-catheter. After informed consent, portcatheter (BBraun Celsite, Germany) had been implanted intrathecally under the local anesthesia. Catheter had been inserted on the L3-4 level using 16 G Tuohy needle. Intrathecal end of catheter directed upward 5 cm without paresthesia, the outer one tunneled and connected to subcutaneous port which was located on the right anterior axillary line, anterior to the VIII-X ribs. After checking of port-catheter functioning intrathecal morphine doses titrated. 4 mg/24h morphine had been sufficient for complete pain relief without respiratory depression. On the second day after portcatheter implantation patient felt sever frontal headache which was aggravated by the head supination.

It was concluded that there was a PDPH due to spinal fluid leakage over catheter. Bed rest, fluids and caffeine was not helpful. After 72 h of port-catheter insertion, to perform epidural blood patch had been decided and informed consent received. An epidural blood patch performed by withdrawing 20 mL of blood from the right antecubital vein under aseptic condition. At the same time, the epidural space was identified between the fourth and fifth lumbar vertebrate space using the loss of resistance technique. Subsequently, 15 ml autologous blood had been injected slowly until the pain appearance in patients back. PDPH relieved but after 48 h patient felt sever frontal headache again. Repeated epidural blood patch performed immediately on the L 4-5 level by the same technique but with injection of additional 2 ml blood after the appearing of pain on patients back. Headache relieved completely. Additional treatment was not needed and portcatheter functioned successfully without any future complications.

Discussion

The WHO analgesic ladder forms a useful framework for the initial pharmacological management of patients with cancer

pain. It is reported to be successful in 80-90% of patients [5]. Clinical analgesic studies of patients with cancer demonstrate that approximately 5-15% of patients experience severe pain that is resistant to traditional analgesic therapies [6]. For this significant minority of patients selective interventional analgesic treatment options must be considered including intrathecal drug delivery systems [2,7-9]. The Polyanalgesic Consensus Conference panel of experts convened in 2000, 2003, 2007, 2012, and 2016 to make recommendations on use of intrathecal analgesics based on preclinical trials and clinical experiences [10,11].

Intrathecal therapy, with a low complication rate, has become an alternative to standard pain management for treatment of cancer pain [12]. Implantation of intrathecal drug delivery systems (implantable pumps) are highly effective for cancer pain treatment but their use is considered costly in terminal patients [16]. On the same time, this modality of pain treatment in 23% of cases is complicating with PDPH, which is resolving by conservative treatment in most of them [2].

According to Marcus et al. in refractory cases EBP is useful but in some of them repeated EBP was not helpful and surgical glue/suture was needed at the site of catheter entrance [2]. Intrathecal catheter-port insertion is a cost-effective alternative of implantable pumps for cancer pain treatment [7,12]. In literature, we have not found any information about the PDPH in cancer patients after this procedure. On the other hand, many authors are showing that insertion of an intrathecal catheter following accidental dural puncture might be an effective and dependable method for reducing the risk of a PDPH and requirement in EBP for the obstetric and non-obstetric patients [3,13].

For example, Jadon et al. reported, that after accidental dural puncture they have inserted intrathecal catheter in 34 patients with removing it after 24-36 h and in only two cases was the need in EBP [14]. Etiology by which spinal catheter prevents PDPH is not known however it is postulated that it stimulates inflammatory cells to accumulate near the entry of catheter and closing of dural tear. Formation of fibrin around the intrathecal catheter at the dural tear has also been described in an experimental study [15].

Does it means that in compare to intrathecal pump implantation, subcutaneous port-intarthecal catheter placement is related with reduction of PDPH incidence in cancer patients? Our case is showing that this method is feasible for cancer pain treatment, but is also related with PDPH which can be effectively treated with EBP. For this reason as a rule, 12-18 ml of autologous blood is injected slowly into the epidural space but approximately 10% of patients experience temporary relief and they are needing in repeated procedure within 24 h [16].

In conclusion, epidural port-catheter placement can be a cost-effective alternative of intrathecal pump implantation for pain treatment in terminally ill cancer patient with difficult pain. After this procedure PDPH can occur and EBP is indicated if conservative treatment failed.

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