Pain management in a terminal patient with pelvic osteosarcoma: systemic medication, neuraxial anesthesia, and ethical concerns

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Objectives
To Discuss:

- Ethical decision making in the patient under 18 years of age and a review of *Parens Patrae*.

- The importance of collaboration between palliative care and pain medicine when caring for a terminal patient with pain. Utilization of multimodal medication regime to facilitate pain control and quality of life.

- Regional and Neuraxial approaches to pain in the palliative care patient.

- Systemic medications in the palliative care patient and sedation versus pain control.

Case history:
AS was a 16 yo, 50 kg female with metastatic osteosarcoma. As a survivor of a Wilms' tumor, her osteosarcoma was a secondary cancer. At the time of presentation she was on the state championship golf team and was leading a full life.

She initially presented with left hip pain in August of 2013. A large pelvic mass was identified and the diagnosis of metastatic osteosarcoma was made. She had six rounds of chemotherapy over 3.5 months. With chemotherapy she experienced intractable nausea and vomiting, dehydration, and pain. In addition, her tumor was not responding to treatment. She spent much of this time in the hospital. AS made the decision to forgo additional chemotherapy or invasive procedures, in essence making the decision to be terminal. Her focus and mantra became "quality of life over quantity of life."

Questions:
What are the ethical considerations for decision making in the patient younger than18 years of age? Can a minor decide to withdraw from potentially life saving treatment?
What is the legal doctrine of P*arens Patrae*?

Continuation, readmission to hospital:
AS was discharged home with hospice for comfort care. Her pain was initially well managed, and she went on a "bucket list" motorcycle ride. After her ride, her left hip and left leg radicular pain significantly increased. Her pain was no longer controlled despite a morphine equivalent daily dose of ~2000 mg and benzodiazepines. Hospice had exhausted their resources, and she

was readmitted to the hospital for refractory pain in January of 2014. The pain and palliative care services worked together to facilitate a multidisciplinary, multimodal approach to her pain management.

Questions:
How do you manage cancer patients not responsive to increasing doses of opioids? What is the role of pain adjunct medication and/or opioid rotation?

Continuation, systemic medications:
In the first five days of her hospitalization multiple systemic medications were utilized in her treatment regime including: hydromorphone, methadone, ketamine, ketorolac, acetaminophen, gabapentin, clonidine and midazolam. Despite escalating multimodal therapy, pain control remained poor. It was presumed that local pelvic tumor invasion and nerve compression were resulting in a steady increase in her pain intensity and distribution.

Questions:
What is the roll of regional or neuraxial blockade? What are the safety and infection concerns with extended use of epidural catheters?

Continuation, lumbar epidural:
A lumbar epidural was placed hospital day five, and her pain was controlled with 0.1% bupivacaine with clonidine and fentanyl. She was able to walk to the bathroom and remained alert and talkative. When her pain was controlled, plans were made for AS to go home with the epidural. Subsequently, the epidural infusion pump failed in the hospital. Her mother feared there would be similar problems with the pump at home and that she would not be able to manage her daughter's pain. In the interest of discharging the patient with an intrathecal pump that her family would not have to manage, a fentanyl only epidural drip was tried to assess efficacy. It also failed.

Within weeks of being admitted, it became increasingly difficult to manage AS's pain on the above regime. The epidural local anesthetic concentration and volume was escalated, and she was on 0.2% bupivacaine with clonidine at 16 ml per hour. She accepted decreased mobility, but was distressed by the need for a foley catheter.

Questions:
What is the role of ablation techniques such as dorsal rhizotomy, dorsal nerve root ablation, and superior hypogastric or lumbar plexus neurolysis?

Ablation techniques were considered. Dorsal rhizotomy was ruled out based on requirement for surgery, and nerve root ablation was ruled out based on the risk for bowel incontinence. AS viewed incontinence as more distressing than pain. A plexus block had limited usefulness for AS, as neither superior hypogastric or lumbar plexus block would improve both pelvic and lower extremity pain.

Continuation, palliative sedation:

As AS's pain escalated, the Palliative Care and Pain teams continued to escalate systemic medications and AS's level of alertness decreased. She no longer had what she and her family had defined as quality of life. After 92 days in the hospital, AS passed quietly in April 2014. Her lumbar epidural remained functional without incident for 87 days.

Questions:
What are the ethics of pain management, palliative sedation and euthanasia? What is the double effect?

Discussion:
AS's Wims' tumor was in remission for over 10 years at the time of her diagnosis with osteosarcoma. Unfortunately, the osteosarcoma being a secondary cancer, was a negative prognostic indicator.

While receiving chemotherapy for the osteosarcoma she was quite ill. She had pain related to the pelvic mass, and nausea and vomiting related to chemotherapy. This resulted in her spending the majority of the time since her osteosarcoma diagnosis in the hospital. That, coupled with the tumor not being responsive to chemotherapy, made the decision to forgo further chemotherapy and /or invasive procedures such as tumor resection a clear decision for AS and her family.

As a 16 year old, AS would typically not be considered competent to make decisions regarding her medical care without her parents consent. Furthermore, it would be expected that her parent's decisions are made based on the ethical standards of beneficence (acting in her best interest) and non-maleficence (doing no harm).

The decisions to forgo therapy would have been a challenge if AS had wanted to stop treatment of her cancer and her parents did not, or if her parents had wanted to stop therapy and she did not. There would also be the consideration for doing no harm, if the medical team had felt her prognosis was good with available treatment.

Parens Patrae, latin for father of the people, is a doctrine used by the state when the state assumes decision making authority for those not competent to make their own decisions. *Parens Patrae* is typically employed when a parents decision-making is in conflict with the ethical standards of beneficence and non-maleficence. This was not a concern in AS's case.

AS's pain management was a challenge as she failed to respond to rapidly escalating doses of opioids. He Pain and Palliative care teams worked closely throughout her hospitalization. The addition pain adjunct medications provides a synergistic affect with opioids, and also targets other receptors that play a role in pain mediation. Opioid rotation is also effective as each opioid medication exerts a varied effect on different opioid receptors. This affect alters analgesic response and side effects.

In AS's case, non-invasive treatment with medication failed as the tumor progressed thus regional and neuraxial techniques were utilized. The lumbar epidural controlled pain initially and

was an adjunct to pain control later in her course. The primary consideration for the length of time she had the catheter was risk for infection, and epidural inflammation and sclerosis resulting in epidural infusion failure. Both considerations are limitations in the patient who is not end of life, but not in the patient who is. Quality of life and relief of pain is paramount and the risks secondary. There are numerous case reports of palliative care patients having epidural and peripheral nerve catheters for similar durations. An intrathecal catheter would have been considered had the epidural catheter failed.

A trial of opioid only epidural infusion is a good indicator of the effectiveness of intrathecal opioid infusion. The trial was not effective, and therefore this modality was ruled out.

As previously stated, AS found the risk of bowel incontinence more distressing than pain and therefore lumbar and/or sacral nerve root ablation was not a consideration for her. Ablative techniques are reserved for palliative care patients, as they are associated with significant co-morbidity and risk. Sensory and motor function cannot be targeted as it is with local anesthetic concentration. Also, with urinary and bladder control being innervated at nerve roots S2 thru S4, bladder and bowel incontinence are possible. That said, nerve root ablation typically blocks pain in palliative care patients for 3 to 6 months. Education regarding co-morbidity is very important for the patient's decision of risk versus benefit.

Of note, dorsal rhizotomy is a surgical intervention and serves a similar function to less invasive techniques. Less invasive nerve root ablation is achieved with radiofrequency ablation or chemical neurolysis with alcohol or phenol. The use of CT coupled with radio-opaque die can assure accurate placement of chemical neurolysis.

Ultimately unable to control pain symptoms while maintaining her level of consciousness the teams moved from pain management into palliative sedation. This included use of sedation to the point of rendering AS unconscious. The goal up until that point was to attempt to control pain while minimizing side effects.

When caring for terminal patients health care providers face the challenge of conflicting interests in the overall care of the patient. The guiding principals include supporting patient autonomy, and beneficence and non-maleficence. When providing palliative sedation, it is difficult to identify how conflicting interests should be weighted and thus is one of the most significant challenges.

The intent of palliative sedation is to provide relief from intractable symptoms even if the provision of such care may hasten the death of the patient. The ethical justification for palliative sedation is the doctrine of double effect. The double effect views certain actions permissible, as long as the nature of the act itself is good, even if it may bring about an effect that one would normally be obliged to avoid. It is important to differentiate this from euthanasia, which is also aimed at the relief of suffering but the ultimate intent is death instead of as the foreseen possible complication as in palliative sedation.

AS passed quietly and without pain with the provision of palliative sedation.

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