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Safety and efficacy of percutaneous drainage in terminal cancer patients with recurrent ascites

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Background/Aims: Terminally ill cancer patients in hospice palliative care (HPC) unit are reluctant to repetitive invasive procedures due to coagulopathies and poor performance or condition. Thus, indwelling percutaneous drainage (PCD) might be more beneficial for recurrent ascites than repetitive paracentesis. The purpose of this study was to investigate the safety and efficacy of the PCD in hospitalized terminally ill cancer patients with recurrent ascites. **Methods:** A retrospective review was conducted in patients who underwent PCD at HPC unit of PNUYH between August 2016 and June 2018. All PCDs were inserted by an interventional radiologist with radiological guidance. The primary end points were functional PCD maintenance rate, which is PCD maintained with patency for drainage until the intended time (discharge, transfer, or death). **Results:** A total of 25 terminally ill cancer patients underwent PCDs during the study period. Patient's median age was 62 years old (range, 36-76). Cancer types are composed of stomach (5, 20.0%), biliary tract (11, 44.0%), pancreas (6, 24.0%), breast (2, 8.0%) and ovary cancer (1, 4.0%). Eighteen patients (72.0%) showed peritoneal seeding based on imaging studies and the other 7 patients (28.0%) had liver metastasis or lymph node metastasis. The success rates of PCD were 100% but 1 patient had trivial bleeding and the other 1 patient had temporary pain. The median time from admission to the insertion of PCD was 5 days (range, 1-49). Twenty one PCDs were maintained with function until the intended time, 3 cases were maintained without function, and the last 1 PCD was removed early due to obstruction. Finally, functional PCD maintenance rate was 84.0% (21/25) and the median functional PCD life span was 15.0 days (95% C.I, 9.5-20.5). Totally 11 complications (21.87/1000 PCD days) occurred followed as: obstruction (5), pain (3), infection (1), leakage (1), and bleeding (1). The median time from admission to HPC unit to death was 27.0 days (95% CI, 24.1 – 29.9). **Conclusions:** Our study showed relatively favorable results for safety and maintenance of PCD in hospitalized terminally ill cancer patients with malignant ascites.

Table 1. Results of PCD

	Number of PCD (N= 25)
Success rate of PCD insertion (%)	25 (100%)
Lumen of PCD	
8.5 French	19 (76.0%)
10.2 French	6 (24.0%)
Complication at the time of insertion	
None	23 (92.0%)
Bleeding (Hematoma)	1 (4.0%)
Pain	1 (4.0%)
Bowel injury	0 (0.0%)
Causes of PCD removal	
Transfer with functional PCD	5 (20.0%)
Deaths with functional PCD	16 (64.0%)
Deaths without functional PCD	3 (12.0%)
Early removal d/t PCD related complication	1 (4.0%)
Functional PCD maintenance rate	21/25 (84.0%)
Median functional PCD life span (days, 95% CI)	15.0 (95% C.I, 9.5-20.5)
Median PCD life span (days, 95% CI)	17.0 (95% C.I, 10.2-23.8)

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Cetuximab induced hypomagnesemia as a predictive marker of cetuximab based chemotherapy

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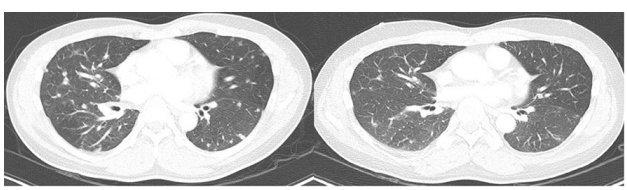
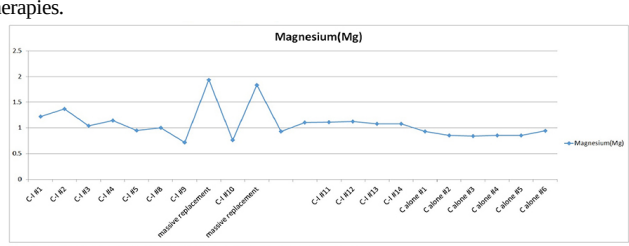
Cetuximab is a monoclonal antibody against an epidermal growth factor receptor (EGFR) used for the treatment of RAS wild type metastatic colorectal cancer (mCRC). Hypomagnesemia is an adverse event (AE) of cetuximab. However, the clinical significance of cetuximab induced hypomagnesemia (C-hypoMg) is unclear. A 41-year-old man was diagnosed with RAS wild type mCRC 3 years ago. He had received several lines of palliative chemotherapies. Bevacizumab, irinotecan, oxaliplatin, and fluorouracil were used as combination agents. Despite the chemotherapies, lung metastases were progressed. We decided to start cetuximab and irinotecan combination chemotherapy (C-I). Two months later, he started to complain anorexia, nausea, diarrhea, severe general weakness, and muscle spasm. Blood test revealed hypomagnesemia (0.72mg/dL). Massive magnesium replacements were given, but hypomagnesemia (hypoMg) was not corrected easily. We decided to remove irinotecan from the chemotherapy. After that, he started to get appetites and stopped to complain diarrhea, general weakness and spasm. Until now, this patient keeps going on cetuximab monotherapy with response (Fig.1A) and progression free survival (PFS) is up to 13 months. Hypomagnesemia is remained but tolerable and manageable (Fig.1B). Magnesium is absorbed in small intestine, filtered at the glomerulus, and reabsorbed in the thick ascending limb of the loop of Henle. EGFR is also highly expressed in these regions. Blocking EGFR by cetuximab may affect the absorption of magnesium. Concurrent use of chemotherapeutic agents is known as one of the risk factors of C-hypoMg. HypoMg is not so rare AE of cetuximab based therapy, that serum magnesium levels should be monitored and corrected appropriately during therapy. In this case, patient experienced severe C-hypoMg. However, risk factor management and supportive care resulted in prolonged PFS (13 months) compared to previous results of cetuximab monotherapy (2 months) and 1st line C-I (10 months) in patients with mCRC. With the optimal supportive cares, C-hypoMg could be a positive predictive marker in cetuximab based chemotherapies.



(Fig1A) The image on the left side which was done before C-I chemotherapy, shows multiple lung metastasis. The image on the right side which was done 6 months later C-I chemotherapy, shows apperant improvement of lung metastasis.



(Fig1B) Trend of magnesium level after starting Cetuximab-Irinotecan chemotherapy.