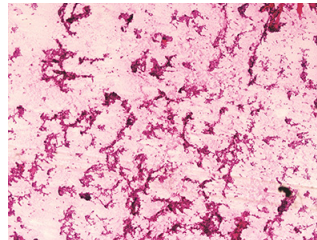


Efficacy of three fine needle biopsy techniques for suspected pancreatic malignancies

¹순천향대학교 천안병원 내과학교실, ²순천향대학교 천안병원 병리학교실, ³순천향대학교 천안병원 예방의학교실, ⁴순천향대학교 부천병원 내과학교실, ⁵순천향대학교 서울병원 내과학교실

*이가영¹, 조현득², 황보영³, 양재국⁴, 한수정¹, 최현종⁴, 이윤나⁴, 차상우⁵, 문종호⁴, 조영덕⁵, 박상훈¹, 이태훈¹

Background/Aims: Endoscopic ultrasound (EUS)-guided fine needle aspiration/biopsy (EUS-FNA/B) has a high diagnostic accuracy for pancreatic tumours. Most reports have focused on the diagnostic yield of cytology or histology; the ability of various FNA/B techniques to obtain an adequate mass of cells or tissue has rarely been investigated. **Methods:** Patients with suspected pancreatic malignancy were sampled by EUS-FNB using a 22-gauge ProCore needle by either the stylet slow-pull-back technique (group A), conventional negative-suction after stylet removal (group B) or non-suction after stylet removal (group C) in the absence of on-site cytopathologist. The adequacy of three techniques based on the diagnostic yield, cellularity, blood contamination, and core tissue acquisition was evaluated. **Results:** A total of 50 patients (27 males) were analysed. The mean tumour size was 21–40 mm in 54%. The rate of a good or excellent proportion of cellularity was highest in group A compared with groups B and C (72% vs. 60% vs. 50%, $p=0.049$). A >25% rate of blood contamination was more prevalent in group B (30% vs. 42% vs. 10%, $p=0.009$). The rate of adequate core-tissue acquisition was not different (52% vs. 34% vs. 50%, $p=0.140$). Based on the multivariate generalized estimation equation, stylet slow-pull-back technique and a tumour size of >40 mm were a favourable factor for diagnostic adequacy. **Conclusions:** The stylet slow-pull-back technique might enable acquisition of tissue and assessment of cellularity for the diagnosis of pancreatic tumours suspected to be malignant.



Risk factors predicting the febrile neutropenia in pancreatic cancer patients receiving FOLFIRINOX

연세대학교 의과대학 내과학교실 소화기내과

*금지영, 이희승, 조준현, 강화평, 정문제, 박정엽, 방승민, 박승우, 송시영

Background/Aims: FOLFIRINOX has become the standard of treatment for the first-line chemotherapy to unresectable pancreatic cancer patients. However, the major disadvantage of FOLFIRINOX is significantly higher toxicity, in particular, febrile neutropenia (FN). The aim of this study was to identify the risk factors for febrile neutropenia in patients with pancreatic cancer receiving FOLFIRINOX. **Methods:** We retrospectively reviewed the data of 119 pancreatic cancer patients treated with first-line FOLFIRINOX chemotherapy between 2015 and 2017. Skeletal muscle area (cm²) was measured using computed tomography scans of the third lumbar vertebra before first FOLFIRINOX chemotherapy. Skeletal muscle area was divided by the squared height to yield a normalized skeletal muscle index (SMI). The baseline characteristics were compared between patients with FN and without FN by independent t-test for continuous variables or Chi-square test for categorical variables. The logistic regression model was used to estimate odds ratios (ORs) of the potential risk factors for the development of febrile neutropenia. **Results:** The mean age of the 119 patients (male, 55.5%) was 58.1 years. The Eastern Cooperative Oncology Group performance status of one and over accounts for 19.3% (23 of 119). The mean body mass index was 22.23 and mean SMI was 45.4 cm²/m². The 101 patients (84.9%) had metastatic pancreatic cancer. The 69 patients (58%) received initial FOLFIRINOX dose reduction. Twenty-three patients (19.3%) were sarcopenic status. A multivariate logistic regression analysis showed that the female factor (OR: 3.86, 95% CI: 1.39 to 10.68, $p=0.009$) was significantly associated with higher risk of FN. The SMI was higher in the Non-FN group however not significant risk factor related to febrile neutropenia in the multivariate analysis. There were trend that Non-FN group was more survived compared to FN group. (Median overall survival: 13.8 vs 11.4, $p=0.052$) **Conclusions:** Female is the independent risk factor for the development of FN in unresectable pancreatic cancer patients receiving 1st-line FOLFIRINOX. In the future, large-scale cohort studies are needed to confirm these results.

Figure 1. Flow chart of patient selection

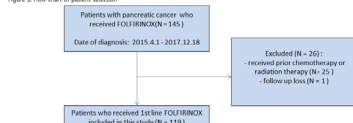
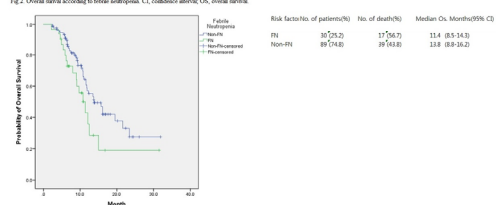


Fig 2. Overall survival according to febrile neutropenia. CI, confidence interval; OS, overall survival



Variables	All patients (n=119)	FN group (n=23)	Non-FN group (n=96)	P-value
Gender				
Male	64 (53.8%)	15 (65.2%)	49 (51.0%)	0.009
Female	55 (46.2%)	8 (34.8%)	47 (49.0%)	
Age, mean (SD)	58.1 (10.5)	55.5 (9.8)	58.4 (10.6)	0.140
ECOG PS				
0	96 (80.7%)	12 (52.2%)	84 (87.8%)	0.009
1	23 (19.3%)	11 (47.8%)	12 (12.2%)	
Body mass index, mean (SD)	22.23 (3.08)	22.1 (3.1)	22.3 (3.1)	0.140
Skeletal muscle index, mean (SD)	45.4 (14.9)	45.2 (15.1)	45.5 (14.8)	0.140
Normalized muscle*				
High	12 (10.1%)	3 (13.0%)	9 (9.4%)	0.486
Low	87 (73.9%)	20 (87.0%)	67 (70.6%)	
Lowest and skeletal muscle index, mean (SD)	10.4 (4.2)	10.3 (4.2)	10.5 (4.2)	0.140
Baseline characteristics				
ECOG PS	96 (80.7%)	12 (52.2%)	84 (87.8%)	0.009
Age, mean (SD)	58.1 (10.5)	55.5 (9.8)	58.4 (10.6)	0.140
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*Normalized muscle was calculated by Skeletal muscle index (cm²/m²) / 100 (cm²/m²)

ECOG PS, Eastern Cooperative Oncology Group performance status; SD, standard deviation; FN, febrile neutropenia; OS, overall survival; CI, confidence interval.

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