Abstract / Povzetek predavanja

Safety, efficacy, and pharmacokinetics of idarubicin-loaded drug-eluting microsphere transarterial chemoembolization for intermediate stage hepatocellular carcinoma

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BACKGROUND

Transarterial chemoembolization (TACE) is the treatment of choice for the intermediate stage hepatocellular carcinoma (HCC). While doxorubicin is commonly used, *in vitro* screening suggests that idarubicin may be more cytotoxic against HCC.

AIM

This study investigated the safety, efficacy, and pharmacokinetics of idarubicin-loaded drug-eluting microspheres TACE in intermediate-stage HCC patients.

MATERIALS AND METHODS

Between September 2019 and December 2021, 31 intermediate stage HCC patients were included to this study. All patients were treated using 10 mg of idarubicin, loaded to 100 μm LifePearl™ microspheres. Outcomes evaluated included adverse events, objective response rate (ORR,, progression-free survival (PFS), time to TACE untreatable progression (TTUP), overall survival (OS), and pharmacokinetics.

RESULTS

A total of 68 procedures were performed. Grade ≥ 3 adverse events were noted in 29.4% procedures. The ORR was 83.9%, median PFS and TTUP were 10.5 months (95% CI: 6.8 – 14.3 months) and 24.6 months (95% CI: 11.6 – 37.6 months), respectively. Median OS was 36.0 months (95% CI: 21.1 – 50.9 months). Higher plasma concentrations at 72 hours post-procedure were observed in patients achieving OR (p=0.014 and 0.014, respectively), the cut-off values were identified at 1.2 ng/mL and 1.29 ng/mL for idarubicinol and combined idarubicin-idarubicinol plasma concentration, respectively.

Table 1: Baseline patient's demographic, clinical, laboratory and imaging characteristics (non-alcoholic steatohepatitis – NASH, hepatitis B virus – HBV, hepatitis C virus – HCV, gamma-glutamyl transferase – GGT, aspartate aminotransferase – AST, alanine aminotransferase – ALT, alpha fetoprotein – AFP, left ventricular ejection fraction – LVEF)

Sex, number of patients (%)	
Male/Female	28 (90.3)/3 (9.7)
Age, years	
Mean ± SD	70.6 ± 6.7
Cirrhosis, n. (%)	
Yes/No	30 (96.8)/1 (3.2)
Cirrhosis aetiology, n. (%)	
Ethylic	21 (67.7)
NASH	4 (12.9)
Hemochromatosis	2 (6.5)
HBV	1 (3,2)
HCV	1 (3,2)
Cryptogenic	1 (3,2)
Portal hypertension, n. (%)	
Yes/No	21 (67.7)/10 (32.3)
Ascites, n. (%)	
Yes/No	10 (32.3)/21(67.7)
Laboratory characteristics	
GGT, median (range) [µkat/L]	1.72 (0.24 –14.83)
AST, mean ± SD [µkat/L]	0.80 ± 0.26
ALT, mean ± SD [µkat/L]	0.71 ± 0.39
Total bilirubin, mean ± SD [µmol/L]	25.03 ± 15.9
Albumin, mean ± SD [g/L]	40.90 ± 5.00
AFP, median (range) [kU/L]	5.3 (1 – 4062.5)
Child-Pugh score (n = 30)	
Mean points ± SD	5.8 ± 1.0
Child-Pugh class (n = 30)	
A/B, n (%)	23 (76.7)/7 (23.3)
Imaging characteristics	
Number of lesions, mean ± SD [mm]	3.1 ± 2.1
Diameter of largest lesion, mean ± SD [mm]	44.8 ± 23.0
Cumulative diameter of lesions, mean ± SD [mm]	75.7 ± 39.8
Unilobar disease, n (%)	16 (51.6)
Bilobar disease, n (%)	15 (48.4)
LVEF (%)	
Mean ± SD	64.1 ± 8.7

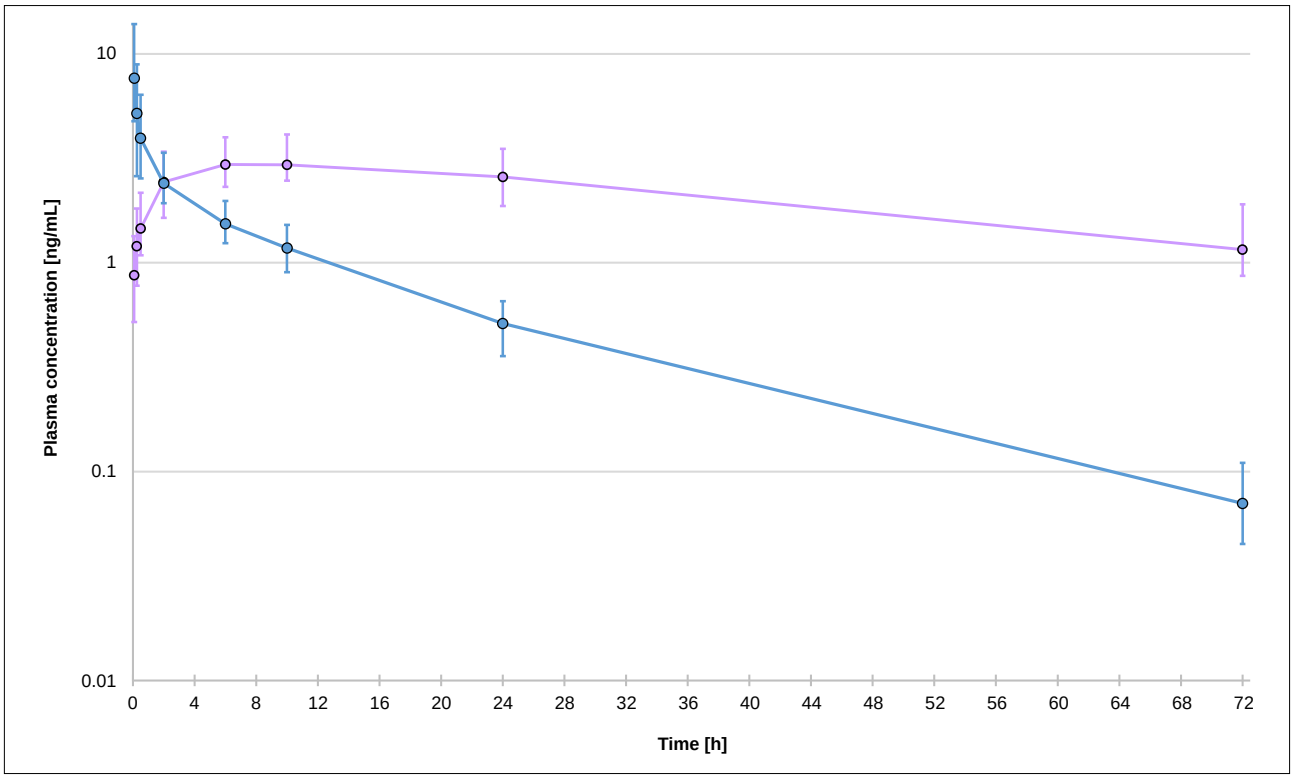

Figure 1 Geometric mean plasma concentration profiles for idarubicin (blue) and idarubicinol (purple) (n = 31). Error bars indicate first and third quartiles of plasma concentrations.

CONCLUSIONS

Idarubicin-loaded drug-eluting microspheres transarterial chemoembolization is a safe and effective method of treatment for the intermediate stage hepatocellular carcinoma with low rates of adverse events alongside high tumor response, favorable disease control and overall survival. Idarubicinol and combined idarubicin-idarubicinol plasma concentrations at 72 hours post-procedure may serve as prognostic factors for achieving objective response.

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