Detection of iAMP21 Chromosome in Pediatric B Lineage Acute Lymphoblastic Leukemia Using Telomere Fluorescence in Situ Hybridization

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INTRODUCTION

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AIM

To investigate the diagnostic method of iAMP21(intrachromosomal amplification of chromosome 21) in pediatric B lineage acute lymphoblastic leukemia(B-ALL) .

METHOD

72 pediatric B-ALL patients diagnosed as iAMP21 used interphase fluorescence in situ hybridization(FISH) were prospectively investigated by telomere FISH(tel-FISH),and the results were compared with that of metaphase FISH(meta-FISH) .

CONCLUSIONS

tel-FISH provides a powerful technique to identify iAMP21 and Extra Copies of 21 abnormalities in B-ALL patients, which is an important supplement to iAMP21 cytogenetic examination. tel-FISH technique should be used as a routine method for the improvement of diagnostic accuracy of iAMP21 in pediatric B-ALL patients .

RESULTS

Of the 72 patients by tel-FISH,10(13.9%) were iAMP21, 62(86.1%) were Extra Copies of 21 . However, only 30 of 72 patients were visible RUNX1 amplification by meta-FISH which included 5(6.9%)iAMP21, 25(34.7%) Extra Copies of 21, Another 39(54.2%) were visible normal signals on karyotype . The remaining 3 (4.2%)patients failed to meta-FISH due to poor quality of the specimens.

Table 1. Summary of tel-FISH results in 72 Pediatric B-ALL

Group	Female,n(%)	Median Age,Years(Range)	Median WBC,10^9/L(Range)	Median *RUNX1* Copies(Range)/Cell	Median *Tel*21q Copies(Range)/Cell	*RUNX1*/*Tel*21q Ratio(Range)
Extra Copies of 21(n=62)	21(33.87)	4.6(2-12)	8.45(1-120)	5(5-7.5)	5(5-7.5)	1.0
iAMP21(n=10)	6(60.00)	8.3(5.8-14)	4.9(1.3-12)	6.35(5-15.7)	3(1-5)	2.6(1.7-15.7)
p	0.113	0.000**	0.084	0.000**	0.000**	0.000**

** $p<0.01$

Table 2.Summary of meta-FISH results in 69 Pediatric B-ALL

Group	Median *RUNX1* Copies(Range)/ Metephase Cell	Median *RUNX1* Copies(Range)/per Aberrant 21
Extra Copies of 21(n=25)	5(5-6)	1
Normal(n=39)	2	0
iAMP21(n=5)	9(5-15.5)	5(3.5-14.5)
p	0.000**	0.000**

** $p<0.01$; Normal, 2 *RUNX1* Copies in the metaphase cell.

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