

Amoxycillin の基礎的臨床的検討

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同 臨床検査科

Amoxycillin は英国 Beecham 社研究所で開発された Ampicillin (ABPC) 類似の新しい経口用合成 Penicillin である。本剤は吸収性にすぐれ、人において ABPC と同量の内服により約 2 倍強の血中濃度がえられ、また ABPC と異なり吸収に与える食事の影響がないと報告されている。われわれは本剤を 19 例の呼吸器および尿路感染症に応用し若干の基礎的検討を加えたのでここに報告する。

I 抗 菌 力

病巣分離の *Staph. aureus* 50 株についてみると、Table 1 のとおり MIC 3.2~6.2 mcg/ml の株が多く

ABPC とくらべ同等の抗菌力を示している。*E. coli* 50 株についても Table 2 のとおり、3.2~6.2 mcg/ml にその株の多くがあり、やはり ABPC との間に差違は認められなかつた。

II 吸収および排泄

血中濃度および尿中排泄については、本剤 250 mg 食前投与と食後投与の比較、本剤 500 mg 投与時と 250 mg 投与時の比較、本剤 500 mg 投与と ABPC 500 mg 投与との比較を cross over で 6 人の成人について行なつた。6 人の性、年齢、体重および本剤の体液中力価測定法は、Table 3 に示すとおりである。与えた食事はす

Table 1 Comparison of MIC of amoxycillin and ampicillin *Staph. aureus* (50 strains)

| Drugs | MIC (mcg/ml) | | | | | | | | | | |
|-------------|--------------|-----|-----|-----|-----|-----|------|----|----|-----|------|
| | ≤0.2 | 0.4 | 0.8 | 1.6 | 3.2 | 6.2 | 12.5 | 25 | 50 | 100 | >100 |
| Amoxycillin | 9 | | 2 | 1 | 8 | 12 | 2 | 3 | 2 | 1 | 10 |
| Ampicillin | 9 | | 2 | 2 | 8 | 10 | 4 | 2 | 1 | 3 | 9 |

MIC of *Staph. aureus* 209 P JC-1

Amoxycillin : ≤0.2 mcg/ml

Ampicillin : ≤0.2 mcg/ml

Method : Agar-dilution method

Medium : HIA (Eiken) pH 7.2

Inoculum size : Undiluted overnight HIB culture

Reading : 37°C, 18 hrs. culture

Table 2 Comparison of MIC of amoxycillin and ampicillin *E. coli* (50 strains)

| Drugs | MIC (mcg/ml) | | | | | | | | | | |
|-------------|--------------|-----|-----|-----|-----|-----|------|----|----|-----|------|
| | ≤0.2 | 0.4 | 0.8 | 1.6 | 3.2 | 6.2 | 12.5 | 25 | 50 | 100 | >100 |
| Amoxycillin | | | 3 | 1 | 10 | 21 | 2 | 2 | 2 | 3 | 6 |
| Ampicillin | | | 2 | 1 | 17 | 15 | 5 | 3 | | 3 | 4 |

MIC of *E. coli* NIHJ JC-2

Amoxycillin : 6.25 mcg/ml

Ampicillin : 6.25 mcg/ml

Method : Agar-dilution method

Medium : HIA (Eiken) pH 7.2

Inoculum size : 10⁻² dilution of 18 hrs. culture (HIB)

Reading : 37°C, 18 hrs. culture

べて折詰弁当であり、薬は食後すぐに服用させた。食直後の Amoxycillin 500 mg 投与時の血中濃度は Table 4 のとおり、2時間値が最も高く、平均 5.1 mcg/ml であつた。食直後 Amoxycillin 250 mg 投与時の血中濃度

は 500 mg 投与時と同様に 2時間値が最も高く平均 2.43 mcg/ml であつた (Table 5)。食直後 ABPC 500 mg 投与時の血中濃度も 2時間値が最高で平均 2.35 mcg/ml であつた (Table 6)。食前 Amoxycillin 250 mg 投与

Table 3 Physical status of the subjects and method

| Subject | | Subject | Age | Sex | Body weight |
|---------|---|---------|---------|--------|-------------|
| | 1 | M. I | 39 yrs. | male | 46 kg |
| | 2 | M. Y | 34 yrs. | male | 80 kg |
| | 3 | J. S | 23 yrs. | male | 46 kg |
| | 4 | N. U | 22 yrs. | female | 52 kg |
| | 5 | Y. U | 25 yrs. | male | 46 kg |
| | 6 | M. O | 28 yrs. | male | 65 kg |

| Method | | |
|----------------|--|---|
| Bio-assay | | : Thin-layer cup method |
| Test organism | | : <i>B. subtilis</i> ATCC 6633 |
| Medium | | : Nutrient agar pH 7.2 |
| Inoculum size | | : 10 ⁶ ml |
| Standard curve | | : Diluted with buffer, M/15phosphate buffer |
| pH | | : 7.2 |

Table 4 Serum levels and urinary excretion of amoxycillin given 500 mg with food in six healthy volunteers

| No. | Volunt. name | Serum levels in hour (mcg/ml) | | | | | Urinary excretion (mg) | | | | |
|-----|--------------|-------------------------------|------|-----|------|------|------------------------|-------|------|----------|---------|
| | | 1/2 | 1 | 2 | 4 | 6 | 0-2 | 2-4 | 4-6 | Total mg | Total % |
| 1 | M. I | 0.3 | 3.0 | 4.2 | 2.9 | 1.8 | 132.3 | 123.2 | 49.0 | 304.5 | 69.0 |
| 2 | M. Y | 0.1 | 4.4 | 5.9 | 3.6 | 1.4 | 127.0 | 201.6 | 73.1 | 401.7 | 80.3 |
| 3 | J. S | 1.1 | 4.8 | 6.8 | 1.4 | 0.89 | 101.0 | 160.0 | 98.0 | 359.0 | 71.8 |
| 4 | N. U | 1.7 | 3.5 | 5.6 | 2.9 | 0.61 | 150.0 | 132.0 | 90.0 | 372.0 | 74.4 |
| 5 | Y. U | 0.3 | 2.6 | 4.3 | 3.5 | 2.1 | 112.0 | 112.5 | 42.7 | 267.2 | 53.4 |
| 6 | M. O | 0.58 | 2.8 | 3.8 | 1.4 | 0.33 | 105.0 | 172.0 | 34.4 | 311.4 | 62.3 |
| | Mean | 0.68 | 3.51 | 5.1 | 2.61 | 1.19 | 121.2 | 150.2 | 64.5 | 336.0 | 67.2 |

Table 5 Serum levels and urinary excretion of amoxycillin given 250 mg with food in six healthy volunteers

| No. | Volunt. name | Serum levels in hour (mcg/ml) | | | | | Urinary excretion (mg) | | | | |
|-----|--------------|-------------------------------|------|------|-----|------|------------------------|------|------|----------|---------|
| | | 1/2 | 1 | 2 | 4 | 6 | 0-2 | 2-4 | 4-6 | Total mg | Total % |
| 1 | M. I | 0.1 | 1.2 | 2.1 | 1.8 | 0.68 | 2.4 | 57.6 | 43.5 | 103.5 | 41.4 |
| 2 | M. Y | 0.1 | 1.4 | 3.2 | 1.7 | 0.18 | 31.2 | 79.2 | 61.6 | 172.0 | 68.8 |
| 3 | J. S | 0.7 | 2.6 | 3.6 | 1.8 | 0.2 | 21.0 | 70.5 | 44.8 | 136.3 | 54.5 |
| 4 | N. U | 0.2 | 1.6 | 2.0 | 1.6 | 0.27 | 56.2 | 45.5 | 21.0 | 122.7 | 49.1 |
| 5 | Y. U | 0.0 | 0.5 | 1.7 | 2.3 | 1.0 | 11.7 | 78.0 | 66.0 | 155.7 | 62.2 |
| 6 | M. O | 0.1 | 0.9 | 2.0 | 1.4 | 0.17 | 32.5 | 69.3 | 21.3 | 123.1 | 49.2 |
| | Mean | 0.2 | 1.37 | 2.43 | 1.8 | 0.4 | 25.8 | 66.7 | 43.0 | 135.5 | 54.2 |

時の血中濃度は1時間値が最も高く平均3.2 mcg/mlであつた (Table 7)。食直後の Amoxycillin 500 mg と 250 mg 投与時の血中濃度を対比すると、Fig.1 のとおりその peak はいずれも2時間値にあり、前者は後者の

ほぼ2倍に達していた。食直後 ABPC 500 mg と Amoxycillin 500 mg 投与時の血中濃度を対比すると、Fig. 2 のとおりその peak は両者ともに2時間値にあるが、Amoxycillin は ABPC に較べ1時間値が約4倍、2

Table 6 Serum levels and urinary excretion of ampicillin given 500mg with food in six healthy volunteers

| No. | Volunt. name | Serum levels in hour (mcg/ml) | | | | | Urinary excretion (mg) | | | | |
|-----|--------------|-------------------------------|------|------|------|------|------------------------|------|------|----------|---------|
| | | 1/2 | 1 | 2 | 4 | 6 | 0-2 | 2-4 | 4-6 | Total mg | Total % |
| 1 | M. I | 0.0 | 0.2 | 1.5 | 2.4 | 0.92 | 126.3 | 66.0 | 31.0 | 223.3 | 44.7 |
| 2 | M. Y | 0.0 | 1.1 | 3.4 | 1.7 | 0.9 | 139.6 | 67.5 | 38.0 | 245.1 | 49.0 |
| 3 | J. S | 0.1 | 1.6 | 3.4 | 1.9 | 1.1 | 116.0 | 72.0 | 38.0 | 226.0 | 45.2 |
| 4 | N. U | 0.2 | 1.1 | 3.1 | 2.2 | 1.26 | 108.6 | 26.6 | 30.2 | 165.4 | 33.1 |
| 5 | Y. U | 0.0 | 0.13 | 1.45 | 4.6 | 2.2 | 94.8 | 73.6 | 42.5 | 210.9 | 42.1 |
| 6 | M. O | 0.3 | 0.54 | 1.25 | 1.2 | 0.67 | 27.9 | 67.2 | 38.5 | 133.6 | 26.7 |
| | Mean | 0.1 | 0.78 | 2.35 | 2.33 | 1.17 | 102.2 | 62.2 | 36.4 | 200.7 | 40.1 |

Table 7 Serum levels and urinary excretion of amoxycillin given 250mg in six healthy fasting volunteers

| No. | Volunt. name | Serum levels in hour (mcg/ml) | | | | | Urinary excretion (mg) | | | | |
|-----|--------------|-------------------------------|-----|------|------|------|------------------------|------|------|----------|---------|
| | | 1/2 | 1 | 2 | 4 | 6 | 0-2 | 2-4 | 4-6 | Total mg | Total % |
| 1 | M. I | 0.9 | 2.1 | 1.8 | 1.2 | 0.3 | 101.3 | 92.0 | 11.9 | 205.2 | 82.0 |
| 2 | M. Y | 0.2 | 3.7 | 2.9 | 1.4 | 0.27 | 28.0 | 81.7 | 28.4 | 138.1 | 55.2 |
| 3 | J. S | 0.6 | 3.7 | 3.1 | 1.45 | 0.19 | 90.0 | 51.0 | 10.4 | 151.4 | 60.5 |
| 4 | N. U | 0.3 | 4.3 | 2.6 | 1.80 | 0.33 | 30.0 | 57.6 | 16.3 | 103.9 | 41.5 |
| 5 | Y. U | 0.1 | 2.9 | 1.5 | 0.8 | 0.31 | 44.6 | 57.6 | 13.3 | 115.5 | 46.2 |
| 6 | M. O | 0.0 | 2.5 | 2.3 | 0.27 | 0.0 | 52.8 | 58.0 | 11.9 | 122.7 | 49.0 |
| | Mean | 0.35 | 3.2 | 2.36 | 1.15 | 0.23 | 57.8 | 66.3 | 15.4 | 139.5 | 55.8 |

Fig.1 Serum levels of amoxycillin given 500 mg and 250 mg with food

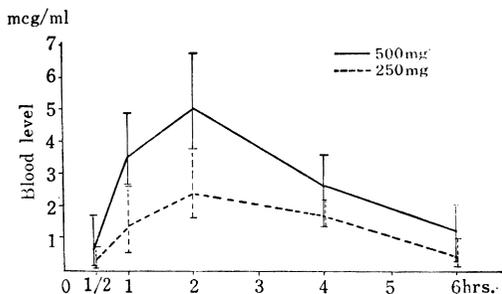


Fig.2 Serum levels given 500 mg of amoxycillin and ampicillin

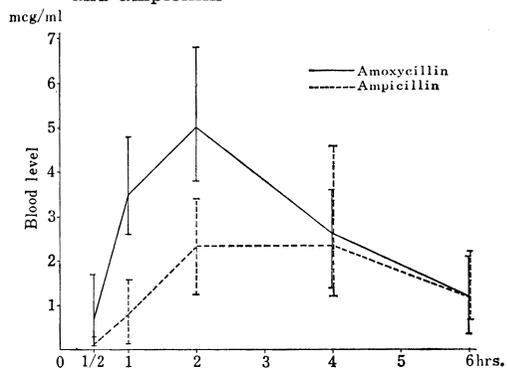


Table 8 Results of amoxycillin therapy of pulmonary and urinary infections

| Case, Sex, Age | Disease | Daily dose | Duration of days admin. | Total dose | Clinical specimen before therapy after therapy | Response | Side effect | Remarks |
|----------------|---|------------|-------------------------|------------|--|----------|----------------------------------|---|
| 1 S M ♂ 30 | Lung abscess | 1.0 g | 21 | 21 g | Sputum <i>Klebsiella</i> ++ <i>Klebsiella</i> ++ | None | None | |
| 2 H O ♂ 32 | Acute pneumonia | 1.0 g | 14 | 14 g | Sputum normal flora <i>Cloacae</i> + | Good | None | Cold Agg. T. 256X <i>Mycoplasma</i> CF Ab. 128X |
| 3 M F ♀ 21 | Acute pneumonia | 2.0 g | 9 | 18 g | Sputum normal flora <i>Pseudomonas</i> ++, <i>Klebsiella</i> ++ | Good | Eruption on 10 th day of therapy | Cold Agg. T. 256X <i>Mycoplasma</i> CF Ab. 128X |
| 4 T G ♂ 72 | Acute pneumonia | 1.0 g | 25 | 25 g | Sputum not expectorated | Good | None | Cold Agg. T. 512X |
| 5 K S ♀ 53 | Acute pneumonia Diabetes mellitus | 1.5 g | 10 | 15 g | Sputum normal flora <i>Staph. aureus</i> +, <i>E. aerogenes</i> + | None | None | |
| 6 S K ♀ 72 | Acute pneumonia Coronary insuff. | 1.0 g | 21 | 21 g | Sputum <i>Ent. cloacae</i> ++ <i>Ent. cloacae</i> + | None | None | Cold Agg. T. 128X <i>Mycoplasma</i> CF Ab. <8X |
| 7 T M ♂ 66 | Chronic bronchitis with acute exacerbation | 0.75 g | 21 | 15.75 g | Sputum <i>Klebsiella</i> + <i>Klebsiella</i> - | Good | None | |
| 8 F O ♀ 58 | Chronic bronchitis with acute exacerbation | 0.75 g | 7 | 5.25 g | Sputum <i>E. coli</i> +, <i>Pseudomonas</i> ++ <i>Pseudomonas</i> ++ | Good | None | |
| 9 T S ♀ 68 | Chronic bronchitis with acute exacerbation | 0.75 g | 7 | 5.25 g | Throat swab <i>Klebsiella</i> + <i>Klebsiella</i> + | None | None | |

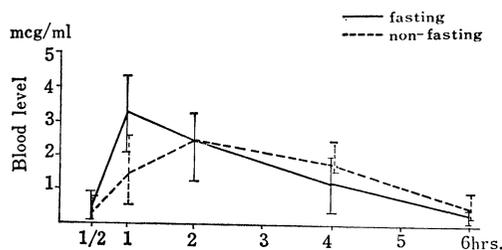
| | | | | | | | |
|----|---------|--|-----------|---------|---|------|--------------------------------|
| 10 | TK ♂ 45 | Chronic bronchitis with acute exacerbation | 0.75 g 14 | 10.5 g | Sputum <i>Hemophilus inf.</i> †† <i>Hemophilus inf.</i> - | Good | None |
| 11 | ST ♂ 72 | Acute bronchitis | 0.75 g 14 | 10.5 g | Sputum normal flora normal flora | Good | None |
| 12 | HA ♀ 69 | Acute bronchitis | 0.75 g 6 | 4.5 g | Sputum normal flora normal flora | Good | None |
| 13 | ST ♂ 43 | Acute bronchitis | 0.75 g 7 | 5.25 g | Sputum normal flora normal flora | Good | None |
| 14 | MS ♂ 69 | Acute pyelonephritis Diabetic nephropathy | 0.75 g 14 | 10.5 g | Urine <i>Enterococci</i> + GNR + | Good | None |
| 15 | KJ ♀ 25 | Acute pyelonephritis | 0.75 g 21 | 15.75 g | Urine <i>E. coli</i> †† <i>E. coli</i> - | Good | Eruption on 2nd day of therapy |
| 16 | KS ♂ 67 | Urinary infection Thrombosis cerebri | 0.75 g 10 | 7.5 g | Urine <i>Pseudomonas</i> †† <i>Pseudomonas</i> †† | None | None |
| 17 | UF ♀ 81 | Urinary infection Thrombosis cerebri | 0.75 g 7 | 5.25 g | Urine <i>E. coli</i> †† <i>E. coli</i> †† | None | None |
| 18 | KT ♀ 78 | Urinary infection Thrombosis cerebri | 1.0 g 20 | 20 g | Urine <i>E. coli</i> †† <i>E. coli</i> †† | None | None |
| 19 | SN ♀ 72 | Acute cystitis | 0.75 g 7 | 5.25 g | Urine <i>E. coli</i> †† <i>E. coli</i> - | Good | None |

Table 9 Clinical laboratory tests

| Case No. | Blood | | | | | | | | | | | | | |
|----------|----------------------|-------|-----------|-------|--------|-------|--------|--------|---------------|---|-------|---|---------|----|
| | RBC($\times 10^4$) | | Hb (g/dl) | | Ht (%) | | WBC | | Blood picture | | | | | |
| | Before | After | Before | After | Before | After | Before | After | Eosino. | | Baso. | | Neutro. | |
| 1 | 466 | 523 | 14.9 | 15.4 | 40.1 | 48.2 | 6,500 | 8,100 | 13 | 5 | 2 | 2 | 60 | 74 |
| 2 | 411 | 441 | 14.0 | 14.6 | 39.8 | 45.2 | 8,500 | 2,500 | 3 | 2 | 0 | 3 | 56 | 33 |
| 3 | 489 | 435 | 14.7 | 13.9 | 45.0 | 41.0 | 4,700 | 5,600 | 2 | 3 | 0 | 0 | 60 | 60 |
| 4 | 478 | | 16.4 | | 49.5 | | 5,500 | 3,700 | 5 | | 1 | | 74 | |
| 5 | 449 | 419 | 14.6 | 12.8 | 43.0 | 41.5 | 14,800 | 6,200 | 1 | 3 | 1 | 1 | 69 | 60 |
| 7 | 440 | 450 | 15.4 | 15.1 | 45.5 | 44.0 | 6,800 | 6,400 | 0 | 1 | 0 | 2 | 61 | 57 |
| 8 | 328 | 356 | 11.3 | 11.6 | 37.0 | 37.0 | 4,700 | 5,000 | 2 | 1 | 1 | 0 | 67 | 58 |
| 9 | 394 | 378 | 12.0 | 12.3 | 38.0 | 39.1 | 5,300 | 5,000 | 13 | 4 | 2 | 1 | 54 | 54 |
| 10 | 508 | 498 | 15.0 | 15.6 | 44.6 | 46.4 | 9,200 | 6,200 | 7 | 5 | 0 | 1 | 62 | 39 |
| 11 | 426 | 452 | 13.7 | 14.5 | 42.4 | 45.0 | 5,000 | 5,200 | 8 | 7 | 1 | 1 | 43 | 36 |
| 12 | 364 | 361 | 13.3 | 12.6 | 37.5 | 35.8 | 4,200 | 4,800 | 9 | 2 | 1 | 1 | 60 | 44 |
| 13 | 433 | 414 | 14.6 | 14.7 | 44.5 | 42.3 | 7,800 | 6,800 | 0 | 2 | 0 | 1 | 73 | 57 |
| 14 | 455 | 475 | 14.5 | 15.4 | 41.1 | 47.0 | 12,700 | 11,400 | 0 | 1 | 0 | 0 | 89 | 83 |
| 15 | 377 | 358 | 11.7 | 11.9 | 33.0 | 33.0 | 8,000 | 4,000 | 0 | 2 | 1 | 1 | 77 | 59 |
| 16 | 368 | 379 | 12.0 | 11.8 | 37.3 | 35.0 | 8,400 | 8,100 | 3 | 1 | 1 | 1 | 71 | 63 |
| 17 | 395 | 365 | 14.1 | 13.0 | 38.5 | 38.5 | 4,600 | 4,600 | 3 | 0 | 0 | 2 | 57 | 61 |
| 18 | 418 | 357 | 14.6 | 12.3 | 43.5 | 36.0 | 6,100 | 3,200 | 2 | 2 | 0 | 0 | 68 | 58 |

時間値も2倍強であるが4時間後では両者はほぼ同等であった。食前と食直後のAmoxycillin 250 mg投与後の血中濃度を比較すると、Fig. 3のとおり前者のほうが吸収がやや早くそのpeakが1時間値にあるが、後者は2時間値にあり、ずれが認められた。尿中排泄は投与6時間までの測定では、Table 4, 5, 7に示すとおりAmo-

Fig. 3 Serum levels of amoxycillin given 250 mg in the fasting and non-fasting state



xylicillin は約60%で ABPC の平均40%と較べ高率であった。

Ⅲ 臨床成績

Table 8に示すとおり、Amoxycillin投与症例は19例で呼吸器感染症13例、尿路感染症6例である。効果は臨床的效果と細菌学的効果をあわせ判定した。肺炎膿症および肺炎の6例では投与量は1~2g、投与期間は9日~25日間で有効例は6例中3例であった。なおこの中、寒冷凝集反応の上昇している例が4例あり、またマイコプラズマCF抗体上昇例が2例認められたが、このような症例の多くは有効例であった。慢性気管支炎の急性増悪や、急性気管支炎では1日投与量0.75g、投与期間6日~21日間で7例中有効6例であった。尿路感染症では1例を除き投与量は1日0.75g、投与期間は7日~21日間で6例中有効3例であった。

Ⅳ 副作用

19例中2例に発疹が認められた。発疹は1例は投与2日目、1例は投与10日目に出現したが中止後3日目には

| | | | | Liver function | | | | | | | | Renal function | | | |
|---------|-------|--------|-------|----------------------------|-------|--------|-------|--------|-------|---------|-------|----------------|-------|--------------|-------|
| Lympho. | | Mono. | | Platelet ($\times 10^4$) | | S-GOT | | S-GPT | | Al-pase | | BUN | | S-Creatinine | |
| Before | After | Before | After | Before | After | Before | After | Before | After | Before | After | Before | After | Before | After |
| 21 | 5 | 4 | 14 | | 28.4 | 40 | 20 | 8 | 8 | 5.7 | 5.5 | 13.2 | 13.4 | 0.89 | 0.86 |
| 31 | 59 | 10 | 3 | | | 42 | 60 | 28 | 50 | 7.1 | 4.2 | 16.0 | 20.6 | 1.14 | 1.20 |
| 29 | 32 | 9 | 5 | | | 11 | | 6 | | 3.9 | | 14.3 | | 0.80 | |
| 15 | | 5 | | | | 19 | | 18 | | 14.1 | | 22.2 | | 1.29 | |
| 17 | 33 | 12 | 3 | 52.8 | | 11 | 10 | 8 | 6 | 8.8 | 6.5 | 16.9 | 27.0 | 0.63 | |
| 37 | 36 | 2 | 4 | 15.4 | 21.6 | 26 | 36 | 12 | 18 | 7.2 | 8.6 | 17.3 | 17.6 | 1.03 | 1.10 |
| 26 | 35 | 4 | 6 | | | 30 | 28 | 10 | 10 | 4.1 | 5.4 | 15.8 | 19.3 | 0.46 | 0.71 |
| 26 | 37 | 5 | 4 | | | 42 | 24 | 12 | 12 | 6.5 | 6.9 | 16.5 | | | |
| 27 | 48 | 4 | 7 | | 29.8 | 30 | 28 | 12 | 12 | 5.0 | 5.2 | 16.3 | 15.7 | 0.53 | 0.86 |
| 43 | 55 | 5 | 1 | | 12.4 | 28 | 28 | 18 | 20 | 7.6 | 6.6 | 15.4 | 14.8 | | |
| 23 | 48 | 7 | 5 | | | 18 | 26 | 6 | 8 | 5.0 | 5.0 | 19.2 | 18.1 | 1.11 | 1.14 |
| 21 | 39 | 6 | 1 | | | 16 | 22 | 12 | 21 | 6.2 | 7.3 | 14.3 | 15.1 | | 1.0 |
| 6 | 12 | 5 | 4 | 14.8 | 12.4 | 40 | 30 | 14 | 26 | 7.1 | 11.2 | 39.0 | 27.2 | 2.03 | 1.44 |
| 20 | 35 | 2 | 4 | 19.2 | 24.8 | 22 | 20 | 8 | 6 | 3.9 | 5.6 | 16.1 | 19.8 | 0.86 | 0.83 |
| 23 | 33 | 2 | 2 | | 28.8 | | 17 | | 12 | | 8.9 | 11.4 | 11.2 | 0.57 | 0.6 |
| 31 | 29 | 9 | 8 | | | | 14 | | 6 | | 6.6 | | 15.1 | | 0.57 |
| 25 | 37 | 5 | 3 | 10.8 | 15.6 | 9 | 8 | 4 | 4 | 4.1 | 5.4 | 16.0 | 15.2 | 0.78 | 0.57 |

いずれも消失した。なお、Table 9 に示すとおり血液所見、肝機能、BUN、尿所見などには本剤によると思われる変化は認めなかった。

総括および結語

基礎的検討において Amoxycillin は *Staph. aureus*, *E. coli* に対しては ABPC と抗菌力は同等であった。血中濃度では Amoxycillin は 2 時間値がもつとも高く、ABPC の同量内服に較べ約 2 倍強であった。また食事の影響をみるための食前後の比較では、米飯を主体とした食事では、食直後に投与した場合には食前投与に比し吸収がやや遅れ、血中濃度の peak は 1 時間のずれがみられた。食直後の Amoxycillin と ABPC 投与時の血中濃度の比較において 1 時間値が前者は後者の約 4 倍であったことから本剤は ABPC に較べ食事の影響が遙かに少ない。さらに消化吸収のよい軽食摂取の場合、投与時間が食後すぐでなく食後いくらか経過した場合などを考えるとその影響はほとんどなくなるものと推定される。臨床成績では 19 例中 12 例が有効であった。呼吸器

感染症は 13 例で有効 9 例、尿路感染症は 6 例で 3 例が有効であった。尿路感染症の有効率が低かつたのは、重篤な基礎疾患のあるものに合併した症例が多かつたためであり、単純感染症の 3 例はいずれも有効であった。われわれの経験例中、軽症例では ABPC よりも少ない投与量で有効な例が多かつたが、本剤の吸収が良好で ABPC より高い血中濃度がえられることに起因するものであろう。また ABPC に対する MIC のやや高い菌の感染症に対しては、同量の ABPC よりも Amoxycillin のほうがより有効ではないかと推察される。副作用としては、2 例に発疹を認めたが重大なものはない。

CLINICAL STUDIES ON AMOXYCILLIN

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I. On the susceptibility of 50 strains of *Staphylococcus aureus* which were clinically isolated, the peak of MIC of amoxycillin was 6.2 mcg/ml and similar to that of ampicillin. On the susceptibility of 50 strains of *E. coli* which were clinically isolated, the MIC of amoxycillin was 3.2 to 6.2 mcg/ml and that of ampicillin was the same.

II. The serum concentrations and the urinary excretions of amoxycillin were examined in 6 healthy subjects in the fasting and non-fasting state to whom 250 mg were administered.

The absorption and the urinary excretion was delayed in the non-fasting state in comparing with that of fasting state (Table 5, 7, Fig. 3).

The peak of serum concentrations given 500 mg of amoxycillin after meal was 5.1 mcg/ml after 2 hours which was about twice of that of cases given 250 mg after meal (Table 4, 5 Fig. 1).

The serum concentrations given 500 mg of amoxycillin after meal was about twice of that of ampicillin (Table 4, 6 Fig. 2).

The urinary excretion of amoxycillin 250 mg or 500 mg was 54.7% to 68.6% during 6 hours following the administration, although urinary excretion of cases given 500 mg of ampicillin was about 40% (Table 4, 5, 6, 7).

III. On the therapeutic efficacy of amoxycillin to bacterial infections, including pneumonia (5), lung abscess (1), acute exacerbation of chronic bronchitis (5), acute bronchitis (2), and urinary infections (6), clinical response was good in 9 cases of 13 cases of respiratory infections, and in 3 cases of 6 cases of urinary infections. The reason of the low percentage of effective cases may probably be attributed to the associated severe underlying diseases in most of our cases.

In less severe cases, there was a tendency to be effective with smaller dosis of amoxycillin, such as 0.75 mg daily, than that of ampicillin probably because of high blood concentration of amoxycillin.

There were 2 cases who had slight eruptions as the side effects of amoxycillin.