



Chief Editor:
Ahmad Husari

Ethics Editor and Publisher:
Ms Lesley Pocock
medi+WORLD International
Email:
lesleypocock@mediworld.com.au

Editorial enquiries:
editor@me-jim.com

Advertising enquiries:
lesleypocock@mediworld.com.au

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From the Editor



Ahmad Husari (*Chief Editor*)
Email: editor@me-jim.com

This is the first issue of MEJIM this year. The topics in this issue vary from obstetrics to oncological cardiology.

A paper from Jordan assessed the efficacy of using intra cervical Foley catheter induction of labour among pregnant women with and without previous caesarean section, and their neonatal outcome at King Hussein Medical Centre. The study was conducted in the labor department of King Hussein Medical Center (KHMC) using a data sheet including patient questionnaire to review demographic characteristics of patients, indication for induction of labor and results of inductions regarding outcome, success rate and neonatal outcome. The most prevalent age group of induced patients was (25 -34 years) which accounts for (54.5%) followed by (16-24) which accounts for (30.5%), 15% only were between the age of 35 and 45. Intra cervical Foley's catheter was the most common used method for induction of labour, where more than half of the Patients used this method (54.5) followed by prostaglandin(23.0%). Artificial rupture of membranes followed by oxytocin or seeping of membranes was the least used methods with each method accounting for around 10 %. The authors concluded that induction of labor in still one of the biggest indications for admissions to labor ward causing a lot of worries to both the patients, their family and the health care providers.

Another paper looked at the role of power Doppler ultrasonography in detection of subclinical hyperuricemia in patients with Non-Hodgkin's Lymphoma. The authors studied 100 NHL patients (divided into 2 groups depending on the presence of the double contour (DC) sign detected by PDUS and 100 controls in a cross sectional study. Demographic, clinical and serological data were evaluated. PDUS was done to all patients and controls.

There was a statistically significant difference between the two groups regarding the presence of subclinical hyperuricemia in group (1)($p=0.008$) who had higher s. creatinine and gouty nephropathy ($p=0.002$ and $p=0.001$ respectively). The authors concluded that PDUS can detect subclinical hyperuricemia and subsequent inflammatory arthritis in NHL patients; also it serves as a non-invasive, bedside tool.

A paper from Kirkuk looked at the Agreement Between Direct Smear Microscopy and GeneXpert MTB/RIF in Diagnosis of Pulmonary Tuberculosis Among Patients Attending Consultatory TB Clinic, Kirkuk. A cross sectional study recruited 958 patients presented to chest and respiratory diseases clinic for the period from 4th of December till 30th June 2014 for detection of Mycobacterium tuberculosis by direct smear microscopy. Out of these 321 samples were tested by gene Xpert; they were stratified according to site of disease to 249 pulmonary and 72 extra pulmonary cases. The authors stressed that tuberculosis is one of the deadliest diseases causing morbidity and mortality worldwide, as it infects 9 million and kills 3 million annually, yet one third of the world population is infected with TB. This study was planned to compare the accuracy of PCR with direct sputum smear among patients attended TB Clinic in Kirkuk. It was found that the percentage of direct smear positive was 3.03% while that for PCR was 11.5%. The percentage of Rifampin resistance was (10.8%) among positive cases. The authors concluded that GeneXpert/MTB/RIF is superior to direct AFB in detecting Mycobacterium tuberculosis, by time and detecting resistance in less than 2 hours.

Early And Late Outcome For Single Versus Double Stenting For Bifurcational Coronary Artery Lesions. Although stent placement with dedicated techniques has been suggested to be a useful therapeutic modality for treating bifurcation lesions, limited information is available if stent placement on the side branch and on the parent branch provides any advantage over a simpler strategy of stenting the parent vessel and balloon angioplasty of the side branch. The purpose of this study is to evaluate two different techniques of stent placement in bifurcation lesions of coronary artery disease. Between January 2010 and January 2012, we treated a total of 92 patients with bifurcation lesions with two strategies, stenting the parent vessel and balloon angioplasty of the side branch (group A, $n=70$) or stenting both vessels (group B, $n=22$). Angiograms were analyzed by quantitative angiography, and clinical follow-up was obtained for six months. Stent placement on both branches resulted in a lower residual stenosis in the side branch. Acute procedural success was similar in the two groups(100%). At the six-months follow-up, the angiographic restenosis rate and the target lesion revascularization rate were similar in the two groups, but repeated percutaneous coronary intervention done for symptomatic patients with de novo lesions in other arteries. There was no difference in the incidence of six-months total MACE. The authors concluded that for the treatment of true bifurcation lesions, a complex strategy of stenting both vessels provided no advantage in terms of procedural success and late outcome versus a simpler strategy of stenting only the parent vessel.

Intra cervical Foley catheter as a method for induction of labour: King Hussein Medical Centre Experience

Fatima Edwan

Correspondence:

Dr Fatima Edwan
King Hussein Medical Centre,
Amman, Jordan
Email: baceel@hotmail.com

ABSTRACT

Aim of study: To assess the efficacy of using intra cervical Foley catheter induction of labour among pregnant women with and without previous caesarean section and their neonatal outcome at King Hussein Medical Centre, Amman, Jordan.

Material and methods: The study was conducted in the labor department of King Hussein Medical Center (KHMC) Amman, Jordan during the period from August 2013 to January 2014 using a data sheet including patient questionnaire to review demographic characteristics of patients, indication for induction of labor and results of inductions regarding outcome, success rate and neonatal outcome.

During the study period (August 2013 to January 2014) a total of 200 patients were admitted for induction of labor and their data were reviewed.

Results: The most prevalent age group of induced patients was (25 - 34 years) which accounts for (54.5%) followed by (16-24) which accounts for (30.5%); 15% only were between the age of 35 and 45.

Booking status : A little more than half of the patients were booked (only 58.5%); more than half of our patients were either para one (39.5% of the cases) or primigravida (24.5%).

Only 35 of the cases had previous one caesarian rate (17.5) and (82.5%) had previous normal deliveries. Most of the studied cases were below 41 weeks of gestational age where (53.0%) of the cases were between gestational age 40-41 week while post term were (10%) of cases and only (1.5%) were less than 34 weeks.

Intra cervical Foley's catheter was the most common used method for induction of labour, where more than half of our patients used this method (54.5%) followed by prostaglandin(23.0%).

Artificial rupture of membranes followed by oxytocin or seeping of membranes was the least used method with each method accounting for around 10 %.

The most common indication for induction of labour was post date (47.5%) followed by others (40.5%) which include (non reactive NST, isolated decreased fetal movement, oligohydromimious, unstable lie, Intra uterine fetal death IUFD, congenital abnormality of the fetus and had obstetric history; maternal diseases represent (8.5%) of the cases.

Pre eclampsia (PET) cases represented the majority of cases (70.5%) followed by Diabetes Mellitus (17.5%); only 2 cases were essential hypertension (12.0%).

More than half of the cases of induction ended with vaginal deliveries (58%); instrumental deliveries were used in 5.5% of cases and in 72 cases the induction ended by caesarean section which represents (36%) of cases. Mode of delivery in patients with previous CS: 65.5% of those cases ended up with a second CS. Vaginal delivery was achieved in more than 34% of the cases : instrumental deliveries in (6%) and normal vaginal deliveries in (28.5%).

Failure to progress represented the most common indication for C/S in pregnant women with previous C/S who underwent induction of labour (60%) followed by fetal distress (37%), while obstructed labour was reported in only one case. (3%) normal body weight was seen in (63%) of babies, good Apgar score (8-9) was reported for 90% of the cases, with 3% had Apgar score less than 7.

Conclusion: Induction of labor is still one of the major indications for admissions to the labor ward causing a lot of worries to both the patients, their family and the health care providers.

Although the practice recommendation for the best method of induction especially for patients with previous uterine scar is still unclear, with a favor for use of prostaglandin preparation, our results suggested cervical Foley's catheter as a reasonable alternative. More studies are needed to validate this option.

Key words: Foley catheter, induction of labour, Jordan

Introduction

Induction of labour is one of the most common interventions practiced in modern obstetrics. It is indicated where the benefits to mother and/or fetus of discontinuing the pregnancy outweigh the risks of awaiting spontaneous onset of labour (1,2). However, induction of labour is not without risk. The World Health Organization (WHO) recommends induction be performed with a clear medical indication and when expected benefits outweigh potential harms (3). Induction of labor describes the process of artificially ripening the cervix and stimulating uterine contractions with the intention of precipitating the active phase of labour, thus leading to progressive dilation and effacement of the cervix with the intention of achieving a vaginal delivery. In the developed world, the ability to induce labour has contributed to the reduction in maternal and perinatal mortality and morbidity.(4)

Rates of labour induction vary between maternity units because of case-mix but the UK average is around 20% (NHS 2006). Induction accounts for approximately 20% of deliveries in the UK and USA (1) and rates have been rising steadily. This has been attributed to patient and physician factors, however elective induction rates are increasing disproportionately [8,9], accounting for 10 to 30% of inductions in some countries.

Induction of labour should only be considered in situations when the balance of risks are such that the if the pregnancy is allowed to continue, and when vaginal birth is thought to be the appropriate route of delivery. In general, this limits induction to pregnancies of gestation greater than the legal limits of viability (usually 24 weeks' gestation).(4)

Materials and methods

Study design

This was a prospective descriptive study to identify the most indications and, different methods of induction of labour and success rate of induction of labor between pregnant women with and without previous caesarean section and their neonatal outcome.

Study setting

The study was conducted in the labor department of King Hussein Medical Center (KHMC), Amman, Jordan during the period from August 2013 to January 2014.

Study population:

All pregnant women attending the labor department for induction of labor during the study period

Study tool:

A preformed data collection sheet including a questionnaire for the patients was used to collect the data from the pregnant women and follow them up to identify the end result of induction.

All patients consented to allow us to use their data in the study.

The approval of the ethical committee at KHMC was obtained.

The data sheet includes pregnant women's name, age, occupation, booking status, gestational age, parity, indications and mode of previous deliveries, mode of delivery in the studied cases and the indication for caesarean deliveries and neonatal outcome.

Results

Table 1: Age of women

	Categories	Numbers	Percentage
Age of women	16 years – 24 years	61	30.5%
	25 years – 34 years	109	54.5%
	35 years – 45 years	30	15.0%
Total		200	100%

1. Age distribution: the most prevalent age group of induced patients was (25 -34 years) which accounts for (54.5%) followed by (16-24) which accounts for (30.5%); 15% only were between the age of 35 and 45.

Table 2: Occupation

	Categories	Numbers	Percentage
Occupation	Works	169	84.5%
	Does not work	31	15.5%
Total		200	100%

2. Occupation status : More than (84.5%) of the cases under study were working pregnant women with only15% not working

Table 3: Booking status

Categories	Numbers	Percentage
Booked	117	58.5%
Not Booked	83	41.5%
Total	200	100.0%

3. Booking status: a little more than half of the patients were booked (only 58.5%),

Table 4: Parity

P	NO	percent
0	49	24.5%
1	79	39.5%
2	17	8.5%
3	23	11.5%
4	12	6.0%
5 and more	20	10.0%
Total	200	100.0%

4. Parity status: more than half of our patients were either para one (39.5% of the cases) or primigravida (24.5%).

The rest of the cases were distributed in different parity groups, although it is worth noticing that around 10% were grand multipara with parity of 5 and more.

Table 5: Mode of previous deliveries

Categories	Numbers	Percentage
Normal	165	82.5%
previous 1C/S	35	17.5%
Total	200	100%

5. Mode of previous delivery: Only 35 of the cases had previous one caesarian rate (17.5) and (82.5%) had previous normal deliveries

Table 6: Gestational Age at induction of labour

	Categories	Numbers	Percentage
Gestational Age	24 weeks – 34 weeks	3	1.5%
	35 weeks – 39 weeks	70	35.0%
	40 weeks – 41 weeks	106	53.0%
	More than 41 weeks	21	10.5%
Total		200	100.0%

6. Gestational age: Most of the studied cases were below 41 weeks of gestational age where (53.0%) of the cases were between gestational age 40-41 week while post term were (10%) of cases and only (1.5%) were less than 34 weeks.

Table 7: Method of Induction

Categories	Numbers	Percentage
Sweeping	21	10.5%
Foley's Catheter	109	54.5%
Prostaglandin	46	23.0%
ARM + Syntocinon	24	12.0%
Total	200	100.0%

7. Method of induction : intra cervical Foley's catheter was the most common used method for induction of labour , where more than half of our Patients used this method (54.5) followed by prostaglandin (23.0%).

Artificial rupture of membranes followed by oxytocin or seeping of membranes was the least used method with each method accounting for around 10 %.

Table 8: Indication of Induction

Categories	Numbers	Percentage
Post Date	95	47.5%
IUGR	1	0.5%
Maternal Disease	17	8.5%
PROM	6	3.0%
Others	81	40.5%
Total	200	100.0%

8. Indication of labour : The most common indication for induction of labour was post date (47.5%) followed by others (40.5%) which included (non reactive NST, isolated decreased fetal movement, Oligohydramnios , unstable lie, Intra uterine fetal death IUFD, congenital abnormality of the fetus and bad obstetric history); maternal diseases represented (8.5%) of the cases.

Table 9: Maternal Disease

Categories	Numbers	Percentage
DM	3	17.5%
PET	12	70.5%
HTN	2	12.0%
Total	17	100%

9. Maternal diseases necessitate induction of labour : pre eclampsia (PET) cases represent the majority of cases (70.5%) followed by Diabetes Mellitus (17.5%) with only 2 cases of essential hypertension (12.0%).

Table 10: Mode of Delivery

Categories	Numbers	Percentage
NVD	117	58.5%
C/S	72	36.0%
Instrumental Delivery	11	5.5%
Total	200	100.0%

10. Mode of delivery in the induction episode : More than half of cases of induction ended by vaginal deliveries (58%); instrumental deliveries were used in 5.5% of cases and in 72 cases the induction ended by caesarean section which represented (36%) of cases.

Table 11: Instrumental Delivery

Categories	Numbers	Percentage
Vacuum	8	73.0%
Forceps	3	27.0%
Total	11	100%

11. Type of instrumental delivery : Vacuum deliveries were the most common followed by forceps (73%.-27%) respectively.

Table 12: Mode of Delivery for patients with previous C/S

Categories	Numbers	Percentage
Normal	10	28.5%
C/S	23	65.5%
Vacuum	1	3.0%
Forceps	1	3.0%
Total	35	100%

12. Mode of delivery in patients with previous CS: 65.5% of those cases ended up with a second CS. Vaginal delivery was achieved in more than 34% of the cases : instrumental deliveries in (6%) and normal vaginal deliveries in (28.5%).

Table 13: Indication of C/S for patients with Previous C/S

Categories	Numbers	Percentage
Fetal distress	13	37.0%
Failure to Progress	21	60.0%
Obstructed labour	1	3.0%
Total	35	100%

13. Indication for CS in the present episode: failure to progress represents the most common indication of C/S in pregnant women with previous C/S who underwent induction of labour (60%) followed by fetal distress (37%) while obstructed labour was reported in only one case (3%).

Table 14: Neonatal outcome

Categories		Numbers	Percentage
Baby Sex	Male	97	48.5%
	Female	103	51.5%
Body Weight	Less than 3.kg	67	33.5%
	3.kg – 4.kg	126	63.0%
	More than 4.kg	7	3.5%
Apgar Score	Less than 7	6	3.0%
	7	15	7.5%
	8	69	34.5%
	9	110	55.0%
	Total	200	100.0%

14. Neonatal outcome : normal body weight was seen in (63%) of babies , good Apgar score (8-9) was reported for in 90% of the cases, with 3% having Apgar score less than 7.

Discussion

In Western countries, labour is induced in 20-30% of all pregnant women for various reasons. Until now different methods for labour induction have been used.

Mean maternal age at birth has increased in most developed countries due to postponement of childbearing due to social, economic and educational factors.(19) In the USA, the birth rate for women aged 35-39 years has risen nearly 50% since 1990 (20). This is not the case in our study population where the mean maternal age was less than 34 years (85%) , most of them were either para one or nullipara (39.5%, 24.5%) respectively. Similar to many other studies, post-term pregnancy was the most common indication for induction (47.5%) (Shetty et al. 2004; Chilaka et al.2004).

Nulliparity was an independent risk factor for prolonged pregnancy in our study which is consistent with previous findings(21,22). Nulliparity was associated with a fivefold increased risk for CS following labor induction among post term pregnancies constituting almost one-third of all failures. This is in line with prior studies on term pregnancies (23,24,25).

Maternal diseases represented (8.5%) of the cases. PET cases represent (70.5%) followed by DM (17.5%). This is due to the fact that the only definitive treatment for PET is delivery. It is one of the most common maternal diseases to end up with induction of labour in many studies (4); other causes were responsible for (40.5%) of the cases which includes NST, decreased fetal movement, Oligohydramnios , unstable lie, IUFD, abnormal baby and bad obstetric history.

The most common method of induction of labour used in KHMC is Foley's catheter (54.5%) followed by prostaglandin (23.0%). The PROBAAT trial showed that induction of labour with a Foley catheter is as effective as induction with intravaginal Prostaglandin E2 gel, with fewer maternal and neonatal side-effects [5], where caesarean section rate was comparable. In the meta-analysis of three trials on the subject, the Foley catheter revealed a lower rate of hyper stimulation, resulting in fewer cases of asphyxia and less post partum Hemorrhage. Consequently, the transcervical Foley catheter was recommended for induction of labour in women with an unfavorable cervix at term [4]. The Foley catheter shows similar success rates as induction of labour with misoprostol (vaginal and oral), and is associated with less uterine hyper stimulation with and without fetal heart rate (FHR) changes and a comparable caesarean section rate [6-7].

Although the National Institute for Health and Clinical Excellence (NICE) guidance recommends vaginal prostaglandin E 2 (PGE 2) as the preferred method of induction of labour ,NICE prostaglandin E 2 was the second most used method of induction of labour(23.0%).

In our population (58.5%) of pregnant women who underwent induction of labour succeeded in achieving vaginal delivery while 36.0% were by caesarean section and only 5.5% delivered by instrumental deliveries. Our rate of caesarean section is higher than in other studies (Mansour Ghanaie et al). This is probably because most of our studied group were with low parity : para one (39.5%) and nulliparous patients (24.5%).

Nulliparity is one of the most important factors known to increase cesarean rate due to failure to progress (Mansour Ghanaie et al.) and this is similar to our result where the most common cause of caesarean section after induction of labour is failure to progress (60.0%).

(17.5%) of the pregnant women who underwent induction of labour in our group had previous caesarean section. The low percentage of those patients is consistent with the observed decreasing trends in women undertaking vaginal birth after caesarean delivery in other studies (26). 65% of them end by caesarean section. This is a higher rate than other studies like the NICHD study, in which the rates of caesarean section in women undergoing planned VBAC were 33%, 26% and 19% for induced, augmented and spontaneous labour groups, respectively.(27)

Failure to progress (60.0%) was the most common cause of caesarean section in pregnant women with previous caesarian who underwent induction of labor, followed by Fetal distress in (37.0%) of the cases. This may result from the practice in KHMC protocol where Foley's catheter is the method of induction in pregnant women with previous c/s, and not using prostaglandin or oxytocin for induction or augmentation of labour in those pregnant women with previous caesarian which probably accounts for the increase rate of cs in those patients because of failure of progress.

Neonatal outcome in our study (neonatal weight, most of them normal body weight (63%) and APGAR scores between (8-9) were (34.5-55.5%) respectively), indicates that the three methods used were safe for neonates and that no major differences are seen in neonates born to women delivered with each method. This supports similar reports from other studies (28,29).

Conclusion

Induction of labor is still one of the major indications for admissions to the labor ward causing a lot of worries to both the patients, their family and the health care providers. Admissions for induction of labour could be reduced by proper evaluation of indications for induction although the practice recommendation for the best method of induction, especially for patients with previous uterine scar, is still unclear with a favor for use of prostaglandin preparation. Our results suggested cervical Foley's catheter as a reasonable alternative.

More studies are needed to validate this option.

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Role of Power Doppler Ultrasonography in Detection of Subclinical Hyperuricemia in Patients with Non-Hodgkin's Lymphoma

Safaa Sayed (1)

Wafaa Gaber (2)

Waleed Hammam (3)

Ahmad Al-Ghitany (4)

Ahmed H. K. Abdelmaksoud (5)

(1) Associate Professor, Rheumatology department, Cairo university, Egypt

(2) Assistant professor, Rheumatology department, Cairo university, Egypt

(3) Lecturer, Oncology department, Cairo university, Egypt

(4) Lecturer,

Internal medicine department (nephrology unit),

Ain Shams university, Egypt

(5) Lecturer, interventional Radiology department, Cairo university, Egypt

Correspondence:

Safaa Sayed, MD

Associate Professor in Rheumatology and Rehabilitation department,

Faculty of medicine, Cairo University

Manawat/Giza

Egypt

Phone: 0020238171015

Email: dr.safaa_sayed@yahoo.com

Introduction

The MSU crystal deposition can be clinically expressed as gouty arthritis, tophi formation, urate nephropathy or urolithiasis[1].

Serum urate (SU) concentration represents the balance between the breakdown of purines and the rate of uric acid renal excretion. The solubility threshold is approximately 7 mg/dl, and when exceeded level of interstitial fluids become oversaturated, which in turn increases the likelihood of monosodium urate (MSU) crystal tissue deposition [2].

Increased turnover of malignant cells results in an increase in cell lysis, catabolism of nucleic acids, and release of purine metabolites. Renal insufficiency develops as a consequence of hyperuricemia and is characterized by urine supersaturated with uric acid and crystallization of uric acid in the renal tubules and distal collecting system [3]. Tumor lysis syndrome (TLS), a potentially life-threatening complication characterized by hyperuricemia, hyperphosphatemia, hyperkalemia, and hypocalcemia can result in acute renal failure. Patients with myeloproliferative disorders, lymphoid malignancies, or solid tumors with large tumor burdens are at increased risk of TLS as a consequence of chemotherapy, corticosteroids, radiation therapy, or stem cell transplantation [4].

Non-Hodgkin's lymphomas (NHL) are the most common occurring hematological malignancies in the world. They represent about 4% of all new cancer cases and are the fifth leading cause of cancer death [5]. The etiology of NHL is unknown although several genetic factors, environmental and infectious agents have been associated with the development of lymphoma as the association with EPV, HIV and HCV cannot be neglected[6].

The treatment of NHL includes chemotherapy with different regimens according to the type of NHL, involved field radiotherapy and the recent target therapy as Anti-CD 20 (rituximab) and Anti-CD 52 (alemtuzumab) antibodies [7].

Ultrasound (US) has been demonstrated to be a valid imaging modality to detect musculoskeletal involvement in patients with gout [8,9]. The main US findings related to MSU crystal deposition include hyperechoic enhancement of the superficial margin of the hyaline cartilage; double contour (DC) sign, hyperechoic spots within tendons and soft tissues, tophi and bone erosions [10]. Additionally, an increase of blood flow surrounding the MSU deposits detected by power Doppler (PD) has been described as an indicator of inflammatory activity [11,12].

ABSTRACT

Objective: This study aimed to detect incidence of subclinical arthritis in patients with NHL and the diagnostic ability of PDUS in detecting subclinical hyperuricemia. **Methods:** We studied 100 NHL patients (divided into 2 groups depending on the presence of the double contour (DC) sign detected by PDUS) and 100 controls in a cross sectional study. Demographic, clinical and serological data were evaluated. PDUS was done to all patients and controls. **Results:** There was a statistically significant difference between the two groups regarding the presence of subclinical hyperuricemia in group (1)($p=0.008$) who had higher s. creatinine and gouty nephropathy ($p=0.002$ and $p=0.001$ respectively). **Conclusion:** PDUS can detect subclinical hyperuricemia and subsequent inflammatory arthritis in NHL patients; also it serves as a non-invasive, bedside tool.

Key words: Hyperuricemia; gouty nephropathy; NHL and PDUS

Materials and Methods

One hundred Egyptian patients diagnosed as NHL were consecutively recruited from oncology department of Cairo university hospitals (46% males and 54% females,) were included in the present study. They were classified into 2 groups, according to the presence of (DC) sign detected by power Doppler ultrasonography (PDUS); group (1) had DC sign (47/100) (47%), and group (2) had no DC sign (53/100) (53%). Four NHL patients (8.5%) in group (1) gave a past history of acute gouty arthritis that was diagnosed according to the criteria for the classification of acute gouty arthritis [13].

All patients were asked to complete a questionnaire on demographics and medications used. All subjects were informed about the aim of the study and gave their consent. Patients were musculoskeletally examined in the rheumatology and rehabilitation department, Cairo university hospitals. Blood was drawn at the time of the study for analyses which included the following: complete blood picture, serum creatinine, fasting blood sugar, serum uric acid, K, P and Ca and liver functions were tested for all enrolled cases. Plain X-ray was done for all enrolled patients.

Power Doppler ultrasonography examination

All subjects subsequently underwent a structural musculoskeletal US evaluation of both knees and 1st MTP joints by two experienced observers. Bilateral knee joints (transverse suprapattellar view of the femoral cartilage in maximal flexion) and bilateral 1st MTP joints (longitudinal dorsal and medial views) were examined to evaluate the double contour sign and effusion, but no tendon US was performed. Double contour sign

was defined as a hyper echoic band over the femoral articular cartilage or metatarsal head cartilage using a 12.5 MHz linear probe (Philips-ATL®, HDI 5000, Philips®, Bothell, WA, USA). Blood flow was examined with a pulse repetition frequency of 750 KHz and a Doppler frequency between 6 and 8 MHz. Attention was given not to compress the tissues under examination to avoid a “blanching” of the PD signal due to the transducer pressure.

Statistical analysis

Computer software package SPSS 15 was used in the analysis for quantitative variables, mean (as a measure of central tendency) and standard deviation (as measures of variability). Frequency and percentages were presented for qualitative variables.

ANOVA test was used to estimate differences in quantitative variables. Chi-square and Fisher-exact tests were used to estimate differences in qualitative variables. P Value < 0.05 is significant [14].

Kappa statistics were calculated to determine the proportion of inter- and intra-observer agreement beyond that expected by chance. The method for estimating an overall kappa value in cases of multiple observers and categories is based on the work of Landis and Koch (1) A value of $\kappa = 1.0$ corresponds to complete agreement; 0, no agreement; and less than 0, disagreement. Landis and Koch suggested that a kappa value ≤ 0.20 indicates slight agreement; 0.21-0.40, fair agreement; 0.41-0.60, moderate agreement; 0.61-0.80, substantial agreement; and 0.81-1.00, almost perfect agreement [15].

Results

Figure 1: the right side shows longitudinal view of the 1st metatarsophalangeal joint, and left side shows transverse view of knee joint, both show the double contour sign (arrow)

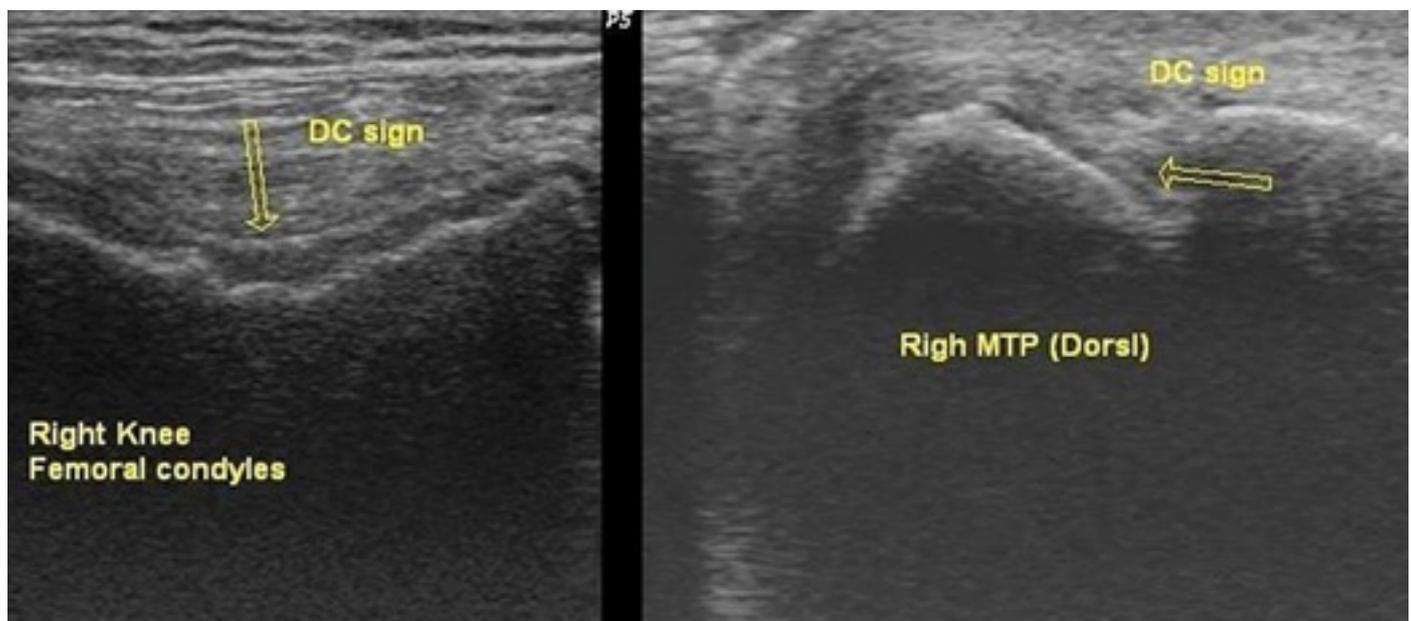


Figure 2: the right side shows longitudinal view of the 1st metatarsophalangeal joint with mild effusion and punched out erosion (arrow), and left side shows longitudinal view of knee joint with effusion and synovial hyper-vascularity (arrow)

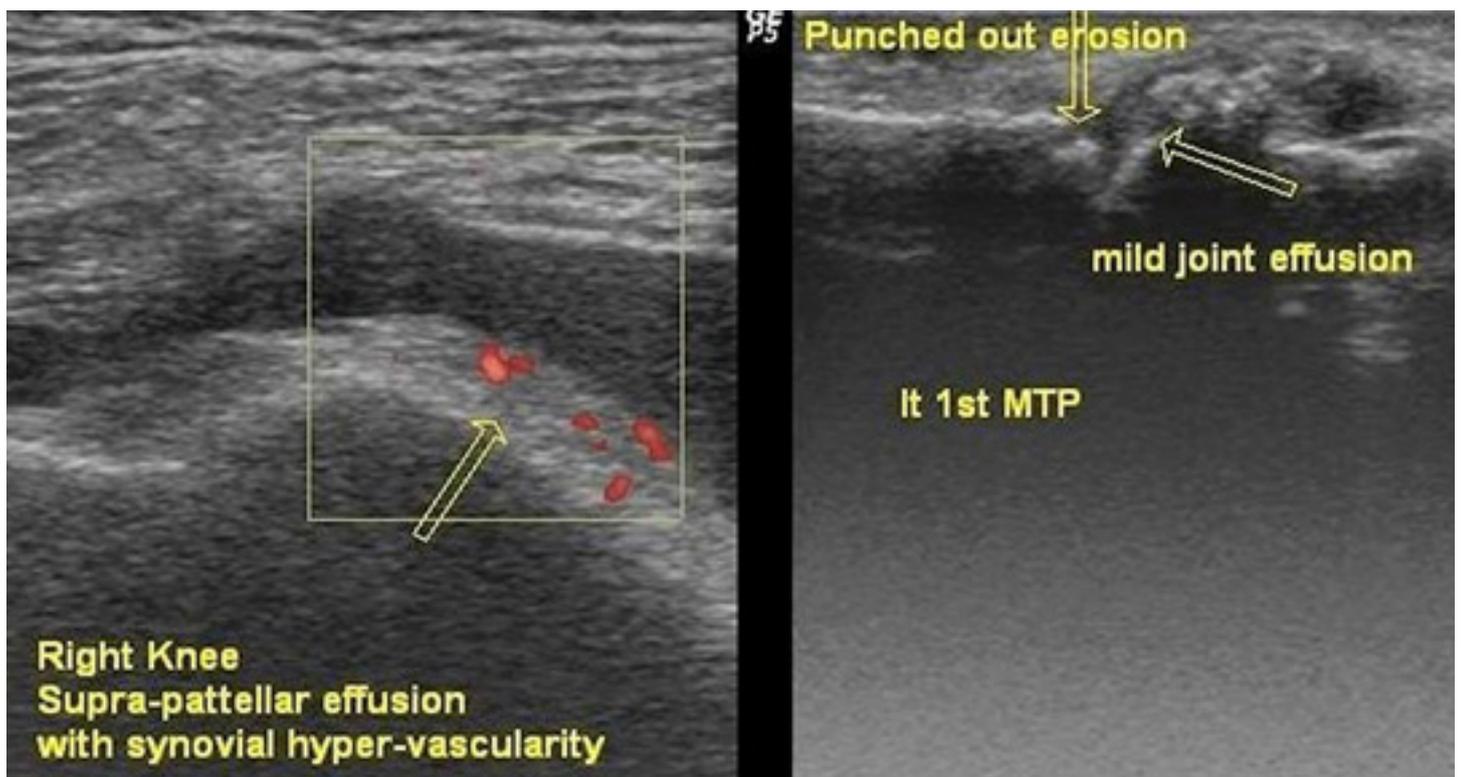


Figure 3: shows that patients in group (1) had significantly higher SUA than those of group (2) (P0.008)

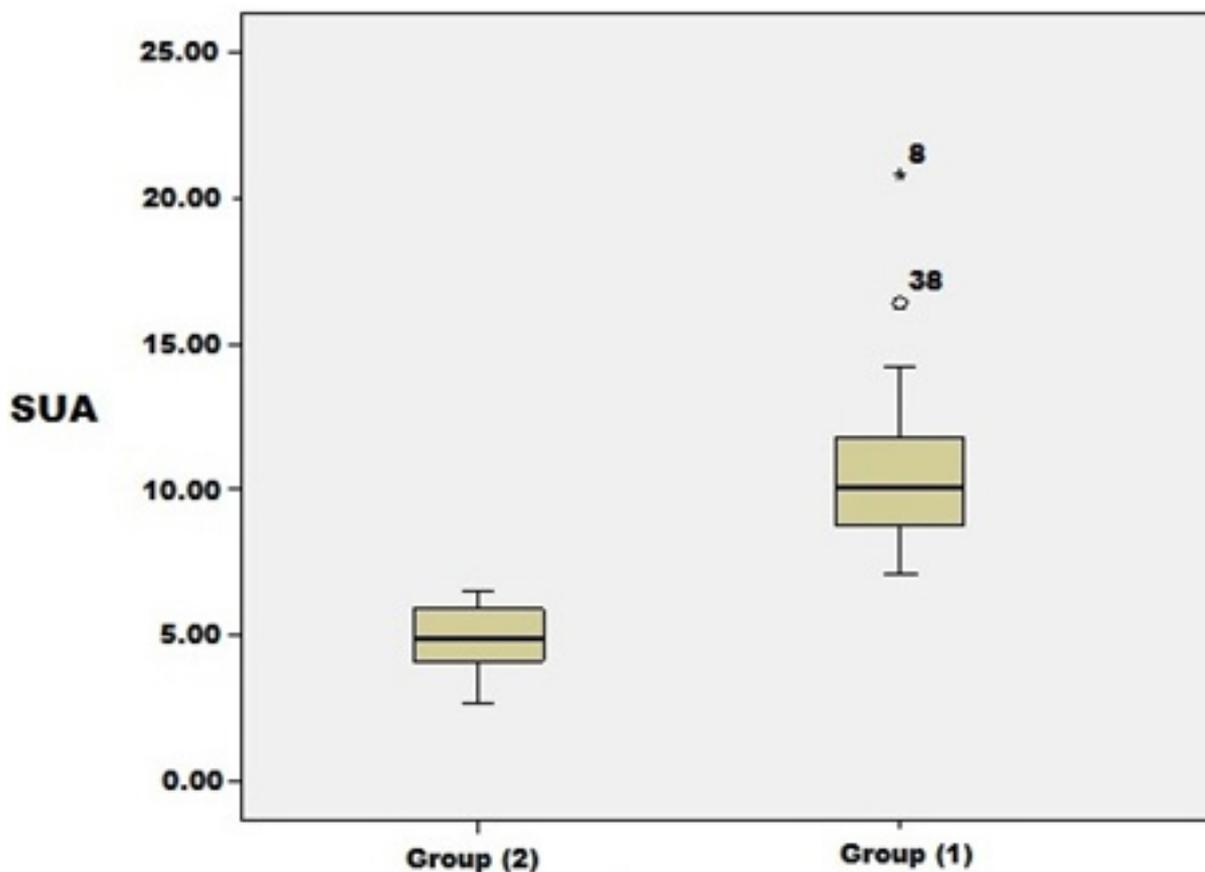


Figure 4: shows that patients in group (1) significantly had higher serum creatinine (P0.002)

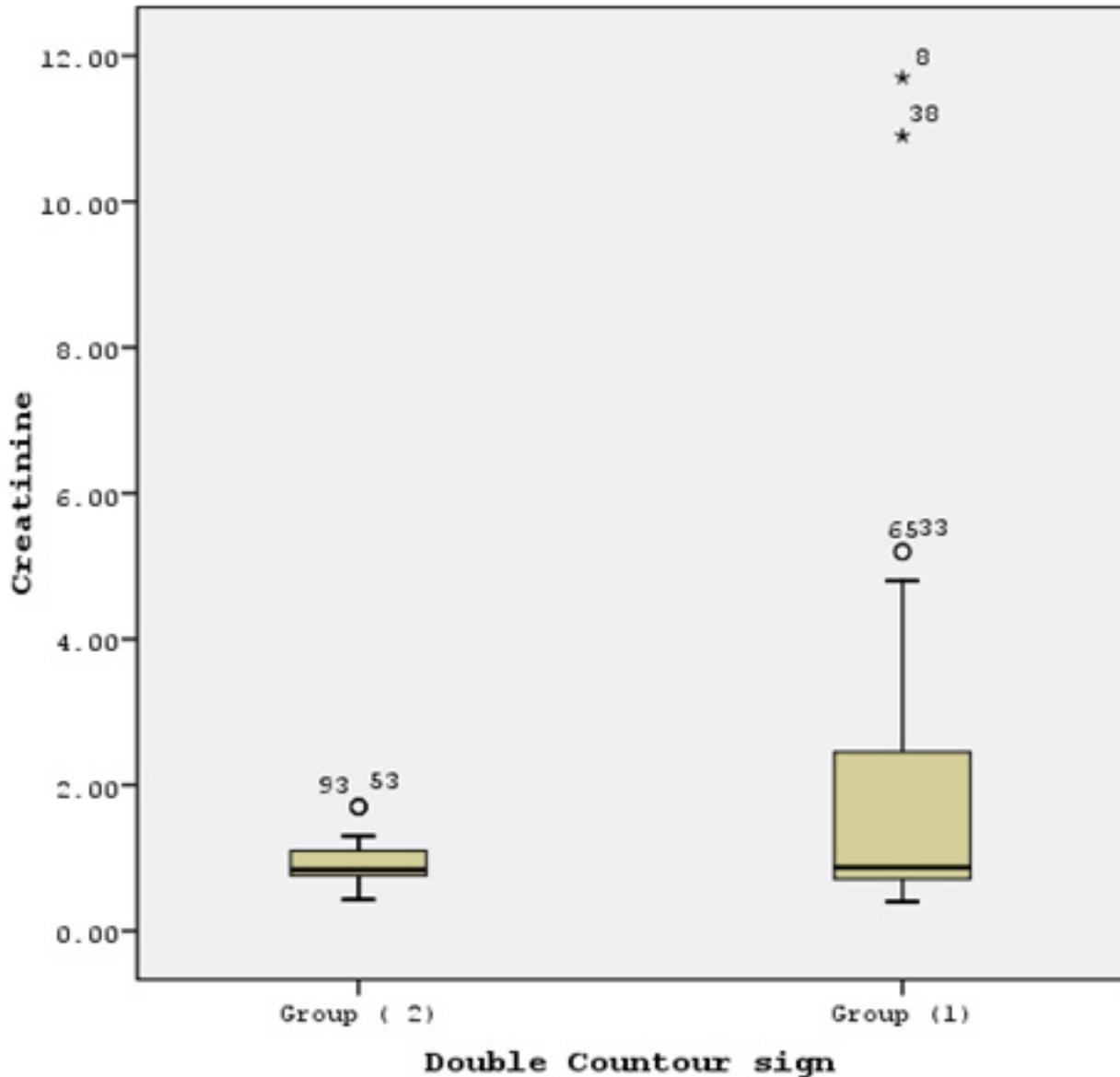


Table 1: Demographics and medications used by the studied patients

	Group (1)	Group (2)	Controls	P value
Age (years) (Mean \pm SD)	47.1 \pm 13.4	44.8 \pm 13.3	45.2 \pm 11.5	0.2
Disease duration (years) (Mean \pm SD)	5.1 \pm 2.4	4.7 \pm 2.9	0 \pm 0	0.3
Patients on allopurinol therapy No. (%)	44.7 \pm 71.7	233.9 \pm 91.9	0 (0%)	<0.001
Chemotherapy cycles (Mean \pm SD)	3 \pm 1.9	4 \pm 1.8	0 \pm 0	<0.001

* Statistically significant value ($p < 0.05$)

Table 2: Clinical, laboratory and PDUS data of the current patients and controls

	Group (1)	Group (2)	Controls	P value
Gouty nephropathy No. (%)	12/47(25.5%)	1/53 (1.9%)	0 (0%)	<0.001
Enlarged Lymph nodes No. (%)	18/47 (38.3%)	1/53 (1.9%)	0 (0%)	<0.001
SUA	10.5± 2.6	4.9± 1.1	10.5± 2.2	0.008
Serum Ca(mg/dl) (Mean ±SD)	8.2± 1.2	9.1± 0.6	8.9±0.2	0.003
Serum P(mg/dl) (Mean ±SD)	5.2±2.8	4.3±1.6	3.6±1.4	0.003
Serum K(mg/dl) (Mean ±SD)	5.1±2.2	4.1±0.4	3.9± 0.3	0.007
Serum creatinine(mg/dl) (Mean ±SD)	1.9± 2.5	0.9± 0.3	10.5± 2.2	0.002
HGB (g/dl) (mean± SD)	11.2± 1.1	11.5± 1	10.5± 2.2	0.6
TLC(103/mm ³) (mean± SD)	8.7± 2.5	7.6± 3.1	9± 0.7	0.7
Platelets (103/mm ³) (mean±SD)	155.7±28	170±25.4	168± 17	0.4
FBS (mg/dl) (mean±SD)	90.2± 10.5	88.1± 13	95± 12	0.7
Synovial hyper vascularity No (%)	20/47 (62.6%)	2/53(3.8%)	0 (0%)	<0.001
Soft tissue edema No (%)	16/47 (34%)	2/53(3.8%)	0 (0%)	<0.001
Bone erosions No (%)	3/47 (6.4%)	0/53(0%)	0 (0%)	0.1
Joint effusion No (%)	16/47 (34%)	0/53(3.8%)	0 (0%)	<0.001

SUA: serum uric acid, Ca: calcium , P : phosphorus , K : potassium, HGB: hemoglobin, TLC: total leukocyte count, FBS : fasting blood sugar, FBS: fasting blood sugar .

* Statistically significant value (p< 0.05)

One hundred NHL patients (46% were males and 54% were females) and 100 age matched healthy controls with a mean age of 45.2±11.5 years were examined during this study. They were classified into two groups according to the presence of the DC sign as shown in Figure 1; inter and intra-reader analysis is 0.71 and 0.74 respectively. Demographics and medications received are shown in Table 1. All patients were on chemotherapy.

Clinical examination revealed MTP joint swelling only in four patients in group 1 (4/47 (8.5%)) and absent in group 2. Joint pain was found in seven patients; five of them complained of MTP joints pain and 2 of them complained of knee joint pain (6/47 (12.8%) in group 1 and 1/53 (18.9%) in group 2.

Tumor lysis syndrome was present in 10/47 (21.3%) NHL patients in group 1 and absent in group 2) (P< 0.001). PDUS detected synovial hyper vascularity in (62.6%) in group 1 and joint effusion in (34%) in group 1 as shown in Figure 2; other clinical, laboratory and PDUS parameters are shown in Table 2.

On comparing the two examined groups, it was found that patients in group 1 had higher SUA (p=0.008) as shown in Figure 3, and higher serum creatinine (P0.002) as shown in Figure 4. Gouty nephropathy was present in group 1 in 12/47 (25.5%); two of them (16.7%) were on hemodialysis but only 1/53 (1.9%) in group 2 had gouty nephropathy with highly significant difference (P<0.001).

In group 1 only 16/47 (34%) were taking allopurinol, in comparison to 49/53 (92.5%) in group 2 with highly significant difference (p<0.001) (odds ratio =0.04 and 95% CI ranging between 0.01-0.13).

There was a past history of acute gouty arthritis in 4/47 (8.5%) in group 1 and absent in group 2 with significant difference (P0.04). Plain -X ray radiography of the patients with past history of acute gouty arthritis revealed soft tissue edema.

Discussion

Gout is one of the commonest forms of inflammatory arthritis. The prevalence appears to be rapidly increasing worldwide [16]. It is mediated by the crystallization of uric acid within the joints [17]. Urate crystals are deposited predominantly in the superficial portions of the articular cartilage. These characteristic cartilaginous deposits are not readily demonstrated with conventional diagnostic imaging modalities [18]. Articular chondrocalcinosis is also a common crystal deposition joint disease in which calcium pyrophosphate dihydrate (CPPD) crystals deposit within the joint cartilage and fibrocartilage. It appears by US as punctate hyper echoic dots within the cartilage resembling “rosary beads” [19].

Treatment of NHL results in metabolic disturbances that require urgent treatment, among these, hyperuricemia has emerged as an important complication associated with the use of newer therapeutic agents. Allopurinol, a xanthine oxidase inhibitor, has traditionally been used to treat hyperuricemia; it blocks the production of uric acid from xanthine and hypoxanthine without affecting the breakdown of already formed uric acid, and at the same time prevents new production [20]. This coincides with the results in the present study as the number of patients on allopurinol therapy is much higher in group 2 who presented with lesser complications of (SUA).

In the current study, on comparing the two groups it was found that patients with DC sign had significant hyperuricemia than those without DC sign (P<0.008). Double contour sign represents SUA crystals deposition in the hyaline cartilages [21]. As confirmation of the presence of MSU in the hyaline cartilage, Thiele and Schlesinger [22] demonstrated the disappearance of the double contour sign in patients with gout successfully treated with urate-lowering agents who had maintained SU levels below 6 mg/dl for at least 7 months [23]. This may strengthen the need for treatment necessity in asymptomatic individuals with hyperuricemia and indisputable US features of MSU crystal tissue deposition such as the double contour sign or the presence of tophi [24].

PDUS detected synovial hyper vascularity in (62.6%) in group 1 and (3.8%) in group 2 and soft tissue edema in (34%) in group 1 and (34%) in group 2 with highly significant difference (P<0.001); joint effusion was detected in (34%) in group 1 and was absent in group 2 with highly significant difference (P<0.001). This strengthens the importance of use of PDUS in detecting the subclinical attacks arthritis [23].

On comparing the two examined groups, it was found that patients in group 1 had higher serum creatinine (P<0.002), as gouty nephropathy was present in group 1 in 12/47; (25.5%) two of them (16.7%) are on hemodialysis, but only 1/53 (1.9%) in group 2 with highly significant difference (P<0.001).

In group 1 only 16/47 (34%) were taking allopurinol, in comparison to 49/53 (92.5%) in group 2 with highly significant difference (P<0.001) (odds ratio =0.04 and 95% CI ranging

between 0.01-0.13). It was found that allopurinol blocks the formation of uric acid by inhibiting the enzyme xanthine oxidase, thus causing an increase in plasma concentrations of the uric acid precursors hypoxanthine and xanthine. Patients at high risk for tumor lysis still need to excrete the preexisting uric acid that is not targeted by allopurinol. Allopurinol also inhibits de novo purine synthesis, further lowering uric acid concentrations [25].

Conclusion

PDUS can detect the subclinical hyperuricemia and the attacks of subclinical arthritis. Also the use of allopurinol therapy decreases the SUA level in NHL patients and subsequently the incidence of gouty arthritis and gouty nephropathy.

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Early And Late Outcome For Single Versus Double Stenting For Bifurcational Coronary Artery Lesions

Aram J. Mirza

Correspondence:

Dr. Aram J. Mirza
Interventional Cardiologist
Director, Cathlab,
Sulaimany Cardiac Hospital.
P.O. Box: 198, Sulsimany,
Iraq

Email: arammerza@ymail.com

ABSTRACT

Objectives: The purpose of this study is to evaluate two different techniques of stent placement in bifurcation lesions of coronary artery disease.

Background: Although stent placement with dedicated techniques has been suggested to be a useful therapeutic modality for treating bifurcation lesions, limited information is available if stent placement on the side branch and on the parent branch provides any advantage over a simpler strategy of stenting the parent vessel and balloon angioplasty of the side branch.

Methods: Between January 2010 and January 2012, we treated a total of 92 patients with bifurcation lesions with two strategies, stenting the parent vessel and balloon angioplasty of the side branch (group A, n=70) or stenting both vessels (group B, n=22). Angiograms were analyzed by quantitative angiography, and clinical follow-up was obtained for six months.

Results: Stent placement on both branches resulted in a lower residual stenosis in the side branch. Acute procedural success was similar in the two groups (100%).

At the six-months follow-up, the angiographic restenosis rate and the target lesion revascularization rate were similar in the two groups, but repeated percutaneous coronary intervention done for symptomatic patients with de novo lesions in other arteries. There was no difference in the incidence of six-months total MACE.

Conclusions: For the treatment of true bifurcation lesions, a complex strategy of stenting both vessels provided no advantage in terms of procedural success and late outcome versus a simpler strategy of stenting only the parent vessel.

Key words: Stent, Bifurcational, coronary arteries.

Discussion

Among complex coronary lesions, bifurcations are those most frequently encountered by every interventional cardiologist. Bifurcation complexity essentially relies on their specific anatomic configuration, which is imperfectly handled by current coronary devices.

Anatomy of Bifurcation Lesions

A coronary bifurcation is a branching artery constituted by a main vessel (MV) and a side branch (SB). The segment before the origin of the SB is referred to as proximal MV, whereas the one that is distal to it is referred to as distal MV. The tissue membrane separating the origins of the 2 bifurcation arms is called the flow divider or carina.

Operative definitions of bifurcation lesions have been based on the SB diameter, either arbitrarily or in relation to potential blood supply.

Actually, a bifurcation stenosis is defined as a coronary artery narrowing occurring adjacent to and/or involving the origin of a significant SB (3). To be significant the SB has to be considered important in the individual patient according to symptoms, location of ischemia, vitality, collateral vessels, and left ventricular function.

Morphology classification is mainly based on plaque distribution. Indeed, plaque distribution can variably involve the proximal MV, the distal MV, or the SB. This has engendered at least 6 different classification schemes (1,3).

Sometimes, branching arteries are called “true” rather than “false” bifurcations according to the mere presence or absence of significant SB stenosis.

Pathological examination (4,5) of coronary arteries reveals that the atherosclerotic plaques are mainly located in areas of low shear stress, such as the lateral walls of the MV and SB, whereas they are less common at the carina level, which is characterized by high shear stress.

The spatial relation between the 2 arms of the bifurcation can be defined by 3 angles that have been recently named A (the angle between the proximal MV and the SB), B (the angle between the SB and the distal MV), and C (the angle between the proximal and distal segment of the MV). At times, bifurcations are defined as V- or T-type according to angle B being $< 70^\circ$ or $> 70^\circ$, respectively.

Moreover, the proximal and distal branches of a bifurcation often do not lie on a single plane, thus posing significant challenges to quantitative coronary angiography software.

A recent ex vivo study of polymer casts of human coronary arteries has revealed a complex curvilinear transition zone

between MV and SB, mainly characterized by an elliptical and asymmetrical configuration of the SB ostium and brief tapering of the SB origin (2,3).

Moreover, it has been previously pointed out that SB ostium asymmetry increases with increasing bifurcation angles. In bifurcations, there is also an asymmetrical geometric reduction according to the law of conservation of energy (2,3).

The complex interaction among different factors makes every bifurcation lesion quite unique, although certain lesion characteristics have been associated with treatment success when using currently accepted techniques and DES platforms (5,6)

The treatment of stenoses at a bifurcation remains one of the most challenging lesion subsets in coronary angioplasty.

Bifurcation lesions carry a risk of side branch occlusion because of plaque redistribution or so-called “plaque shift” across the carina of the bifurcation. The risk is increased if there is an eccentric lesion at the bifurcation site and a stenosis in the ostium of the side branch (7,8,9).

To lower the risk of plaque shift, the “kissing” balloon technique was developed (2). However, the results after balloon dilatation of bifurcation lesions are frequently suboptimal with a high incidence of complications and restenosis(7,8,9). It has also been pointed out that optimal results and low complication rates could not necessarily be anticipated by all operators (8).

The use of coronary stents has improved the treatment of bifurcation lesions, but they are technically challenging and there is compromising of the branch vessel (10,11,12).

Stent implantation on both the parent vessel and the side branch, which is called “kissing stents,” is a useful technique for maintaining maximum expansion of both vessels(12,13).

The use of two stents minimizes lumen loss of one side during expansion of the other vessel (12).

The six main techniques used for bifurcation stenting (the “T” stent and modified “T” stenting, the “V” stent, the “Y” stent, crush technique and the “Culotte” technique) have been shown by figures 1, 2, 3, 4, 5 and 6 (13,14).

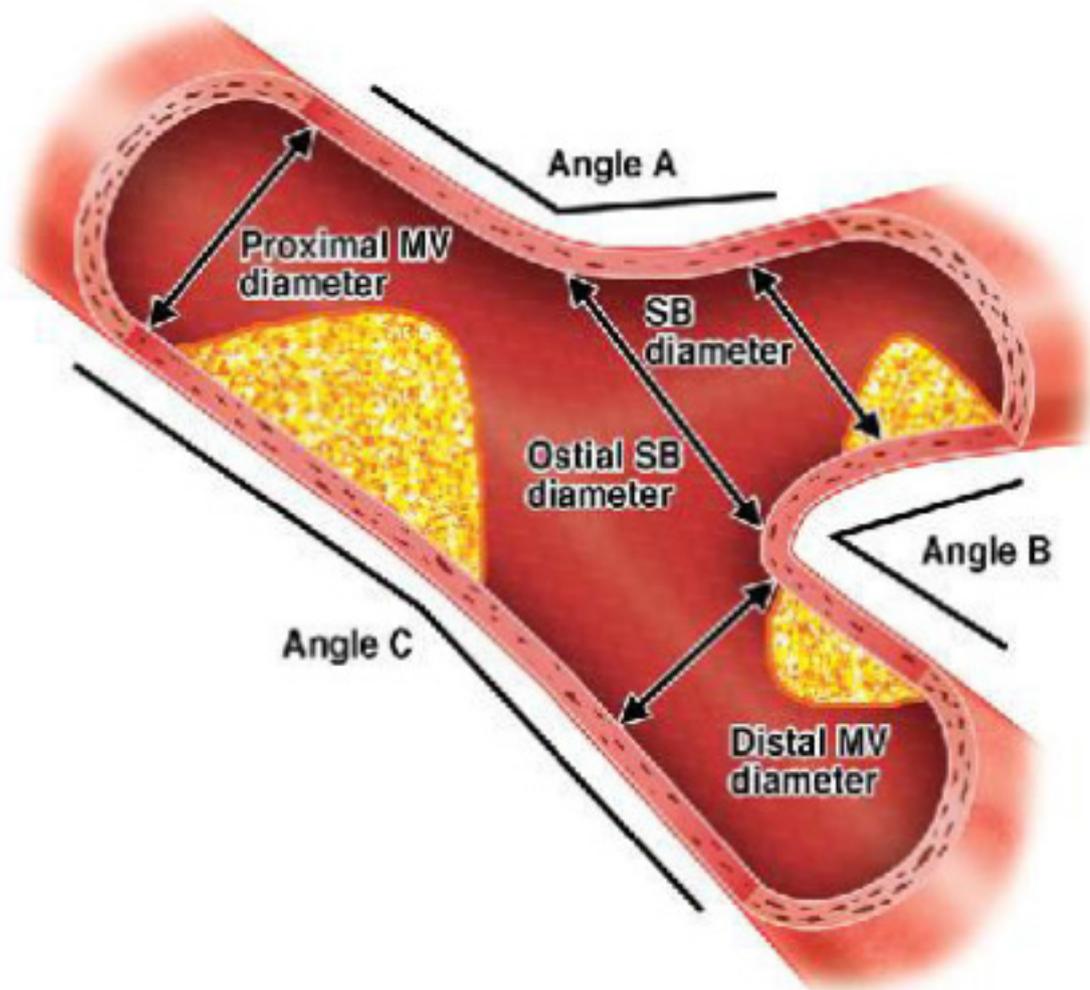
Although these dedicated techniques have evolved along with new stent designs, it is not clear if the strategy of stenting both vessels provides better outcome than that of stenting only the parent vessel. So far, only case reports or limited series are available to understand the results of these different techniques(10,11,12,13,14,15).

For this reason, we analyzed in-hospital results and long-term outcomes for 92 consecutive patients with true bifurcation lesions treated with either stenting both vessels or stenting the

parent vessel plus balloon angioplasty for the branch and we use Medina classification in our description and management of bifurcational lesions(fig .8)

Until the advent of drug-eluting stents (DES) and dedicated techniques, percutaneous bifurcation interventions were associated with very high rates of unfavorable outcomes (12,13,14). Nevertheless, procedures directed to bifurcation treatment are often technically demanding and require proper

execution. When implementing dedicated percutaneous bifurcation approaches, kissing balloon (KB) has been variably recommended to optimize stent apposition, correct stent deformation or distortion and improve side branch (SB) access. Over the years, KB has been deeply investigated by many different methods, from bench testing and computer simulations to in vivo intravascular imaging and clinical studies that have produced a large amount of data.



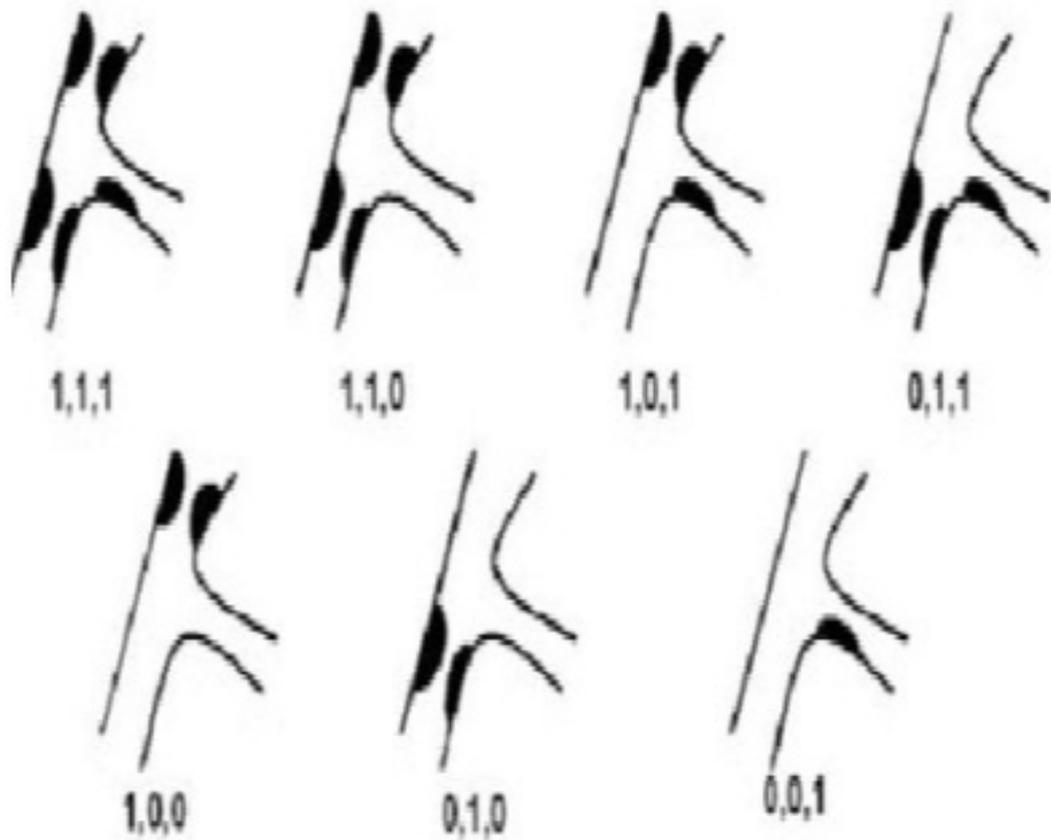
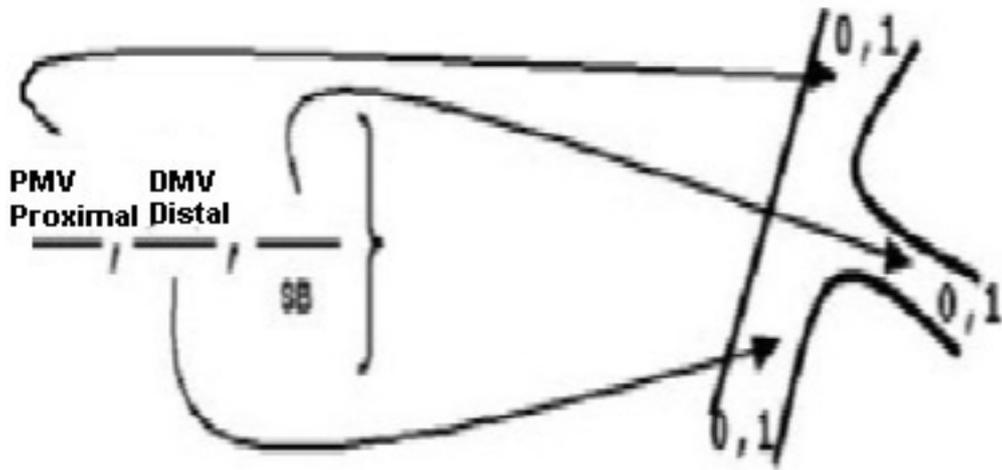


Figure 1:

The “V” and “simultaneous kissing stents” (SKS) stenting technique.

FK - final kissing;
MB - main branch

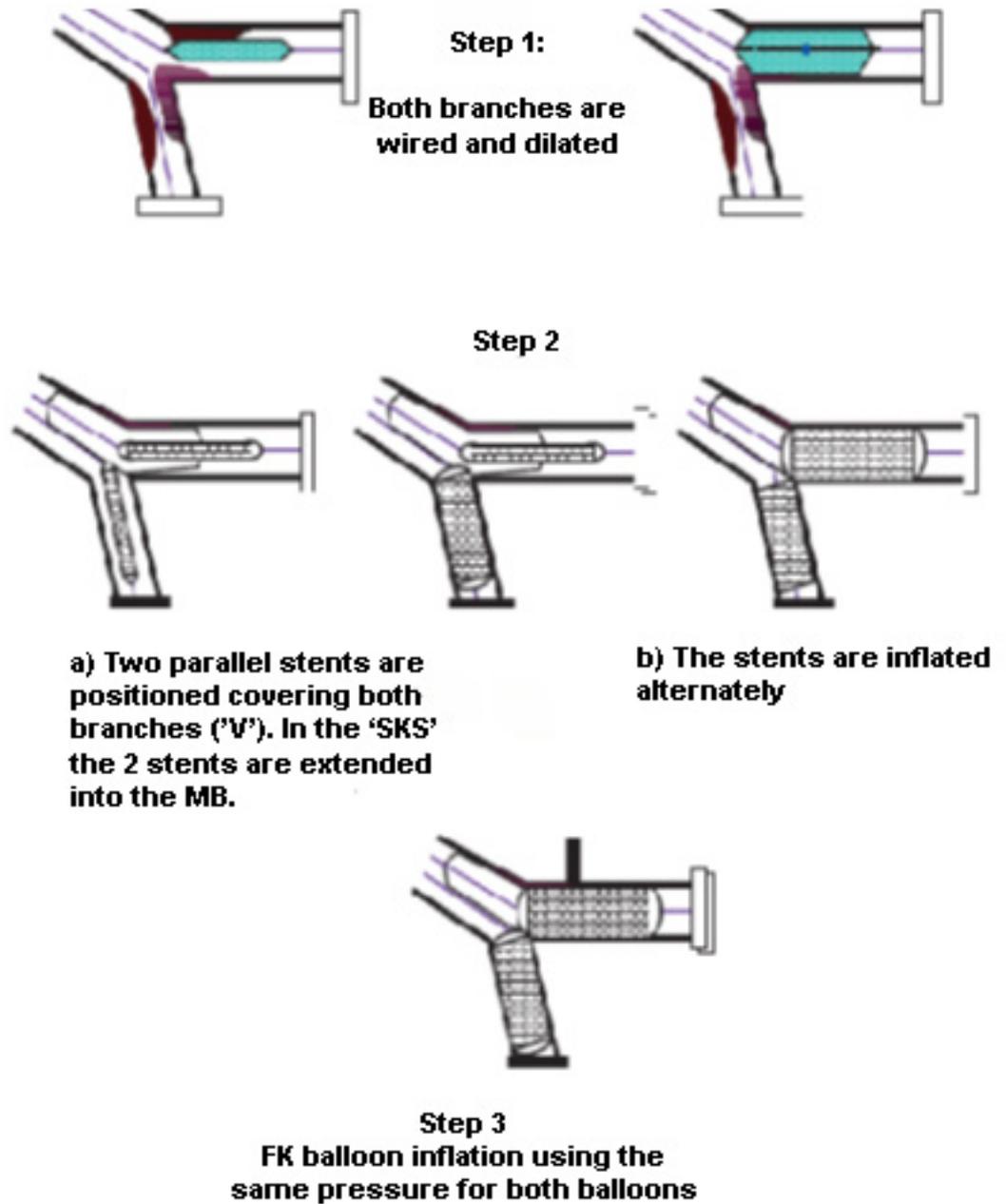


Figure 2:
 “Crush” technique.
 FK - final kissing;
 MB - main branch;
 SB - side branch.

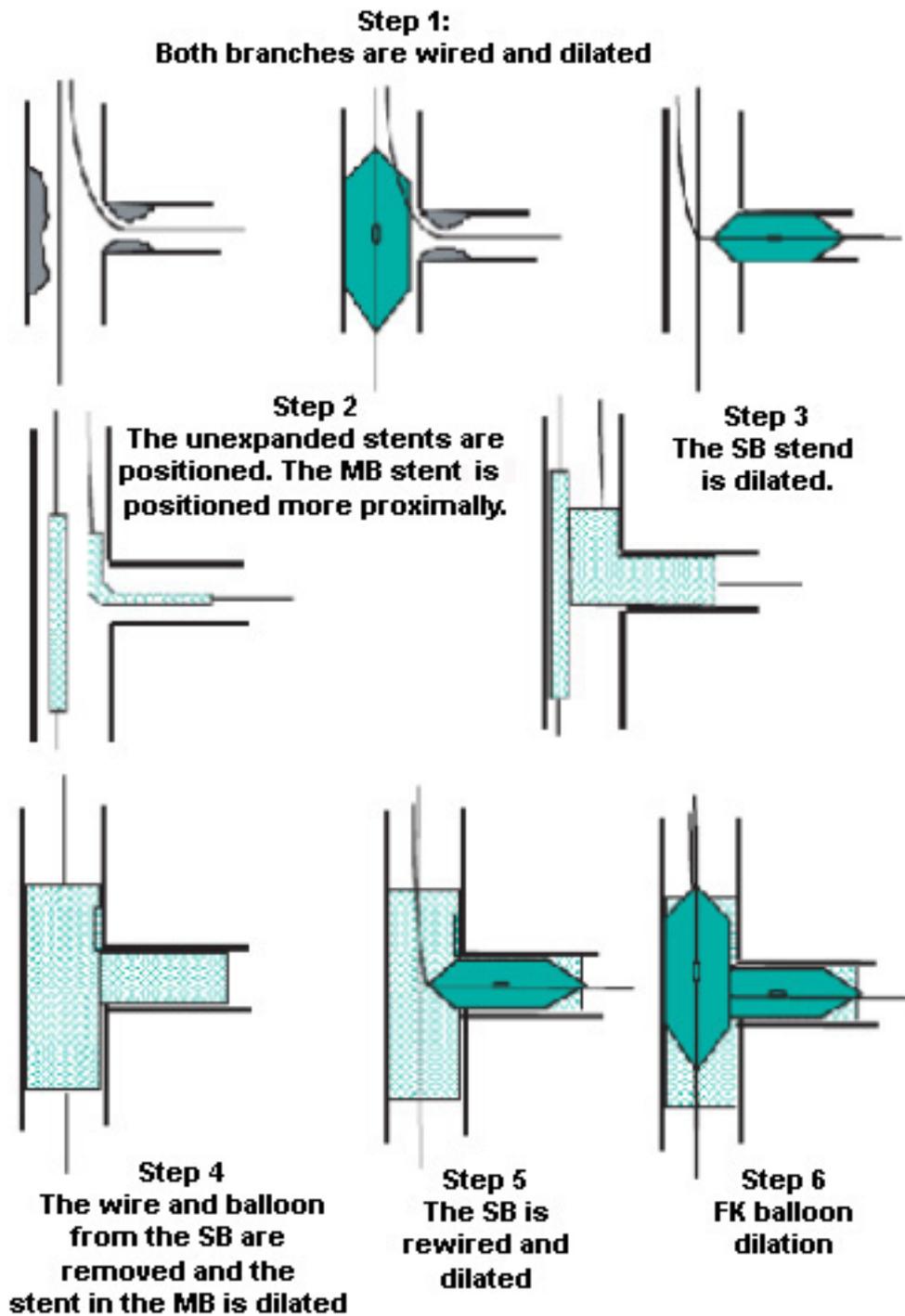


Figure 3:

The T stenting technique
(through the stent).

FK - final kissing;
MB - main branch;
SB - side branch

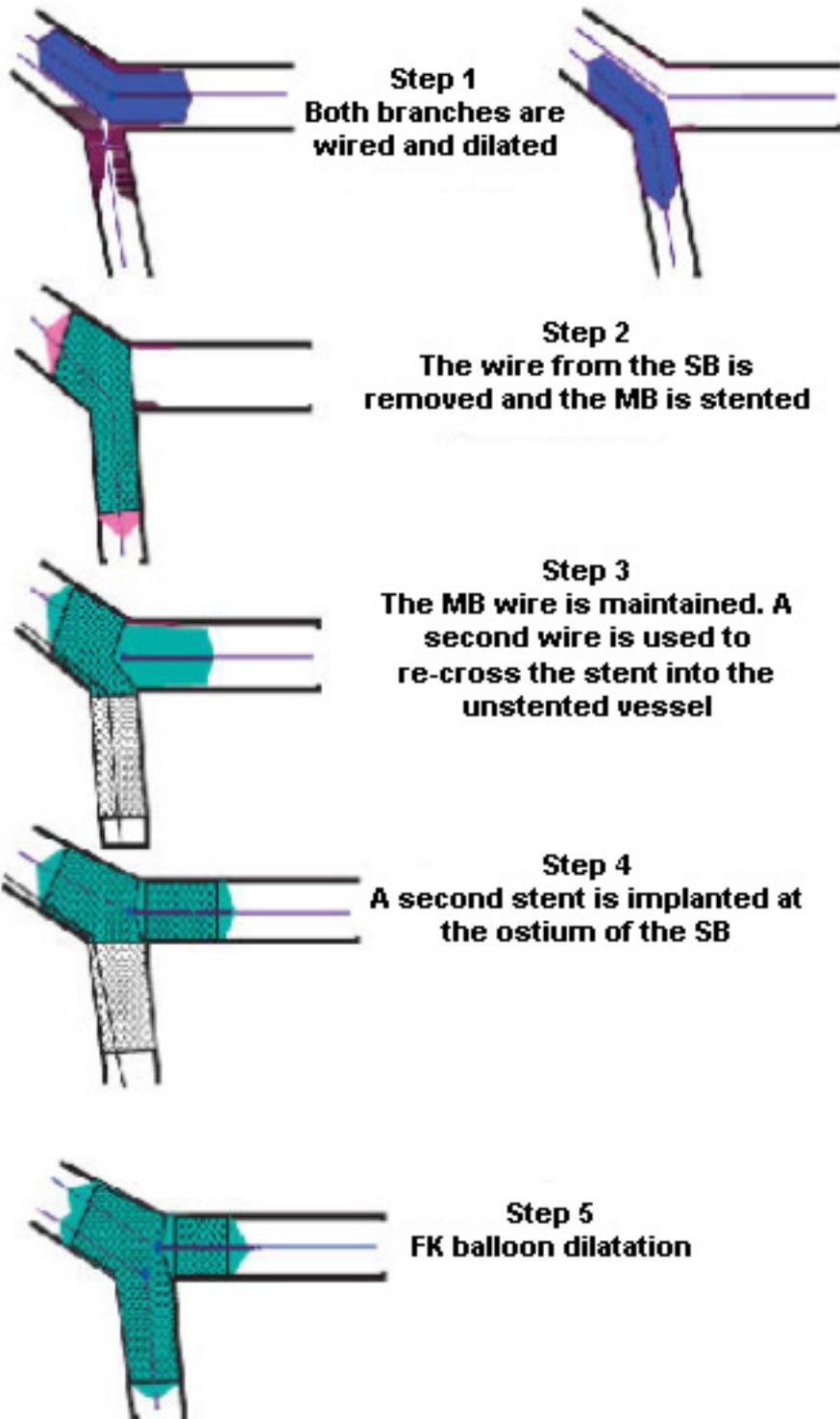


Figure 4:

The modified “T” stenting technique.

FK - final kissing;
 MB - main branch;
 SB - side branch

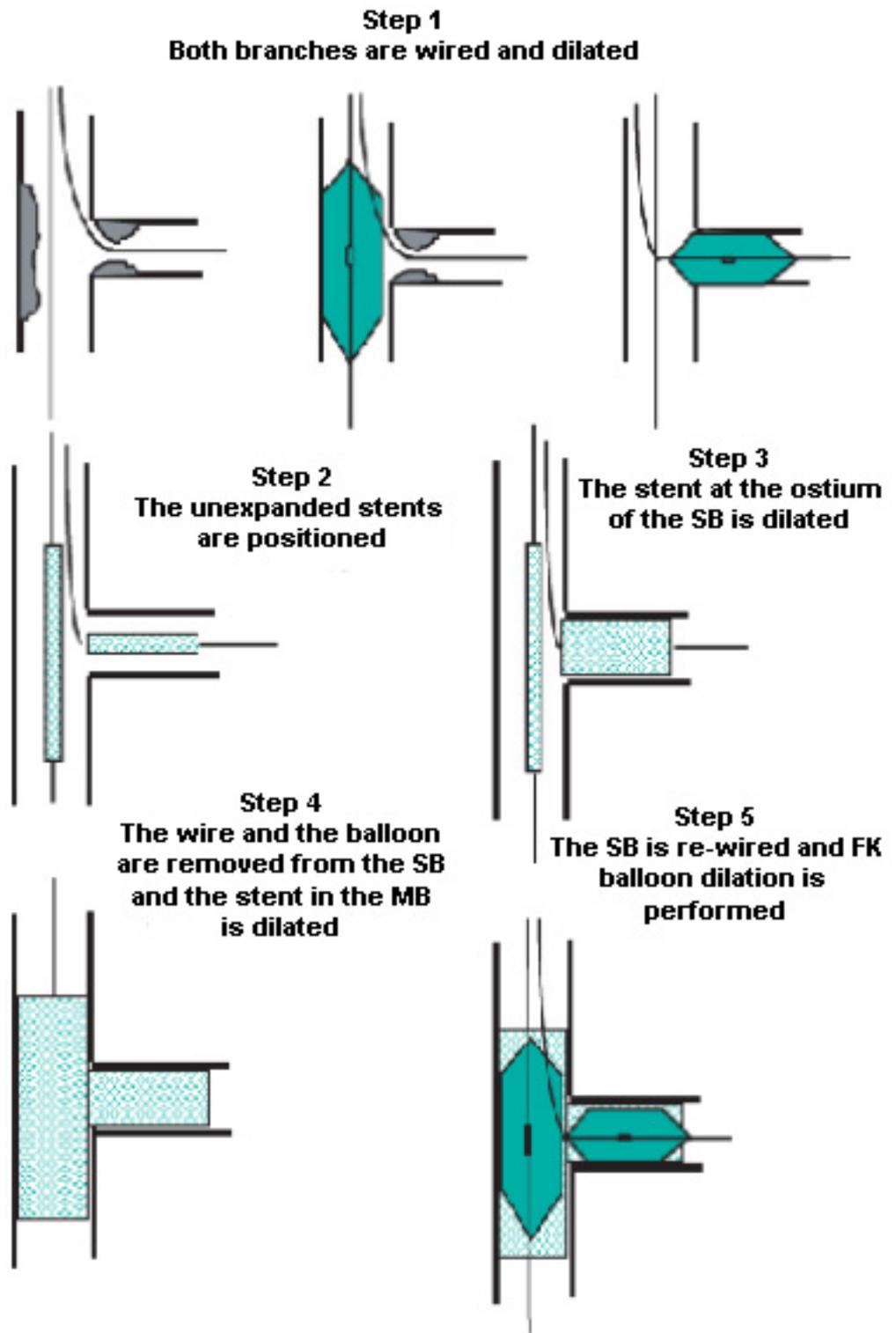


Figure 5:

The “cullottes” stenting technique.

FK - final kissing

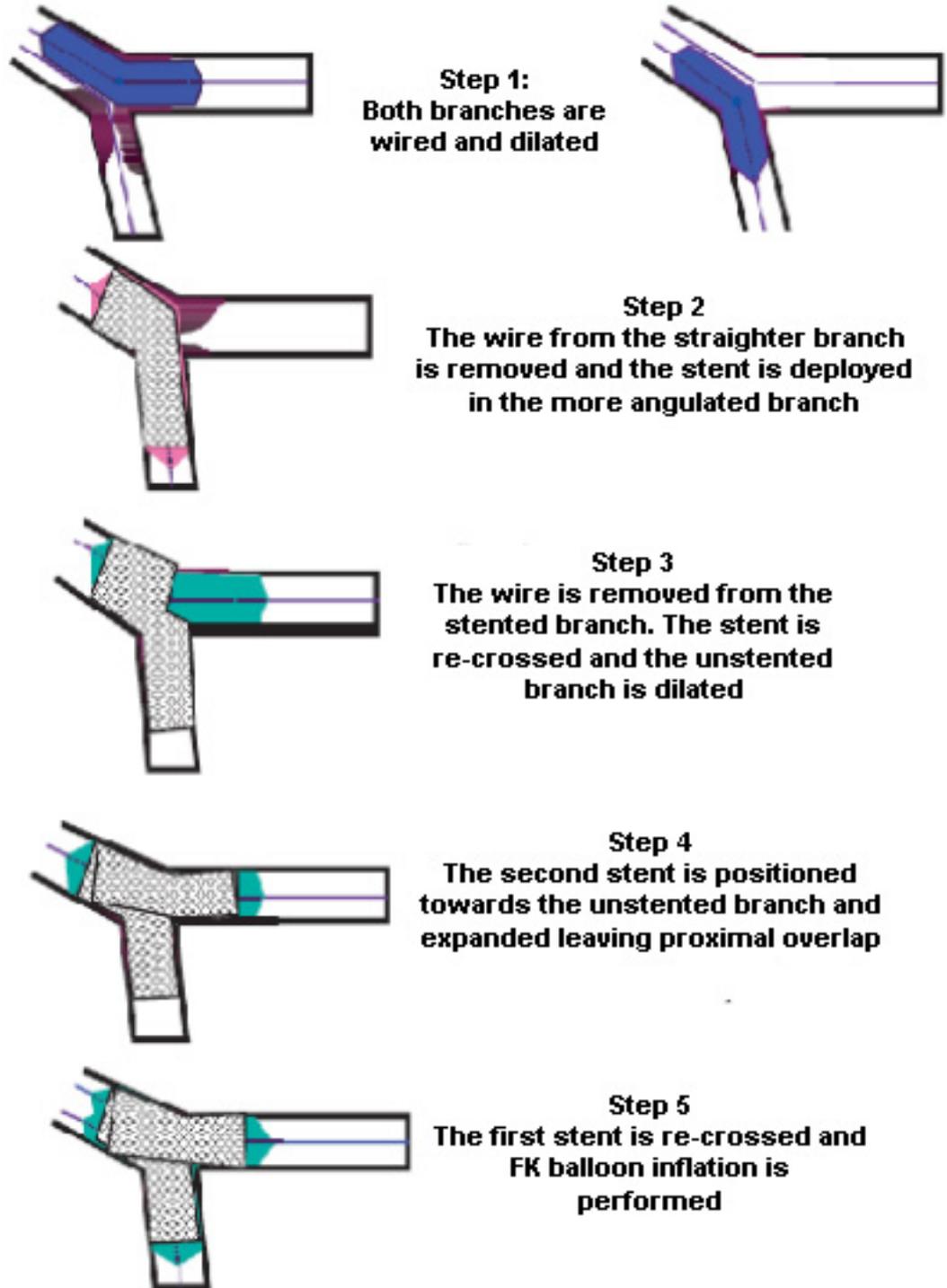
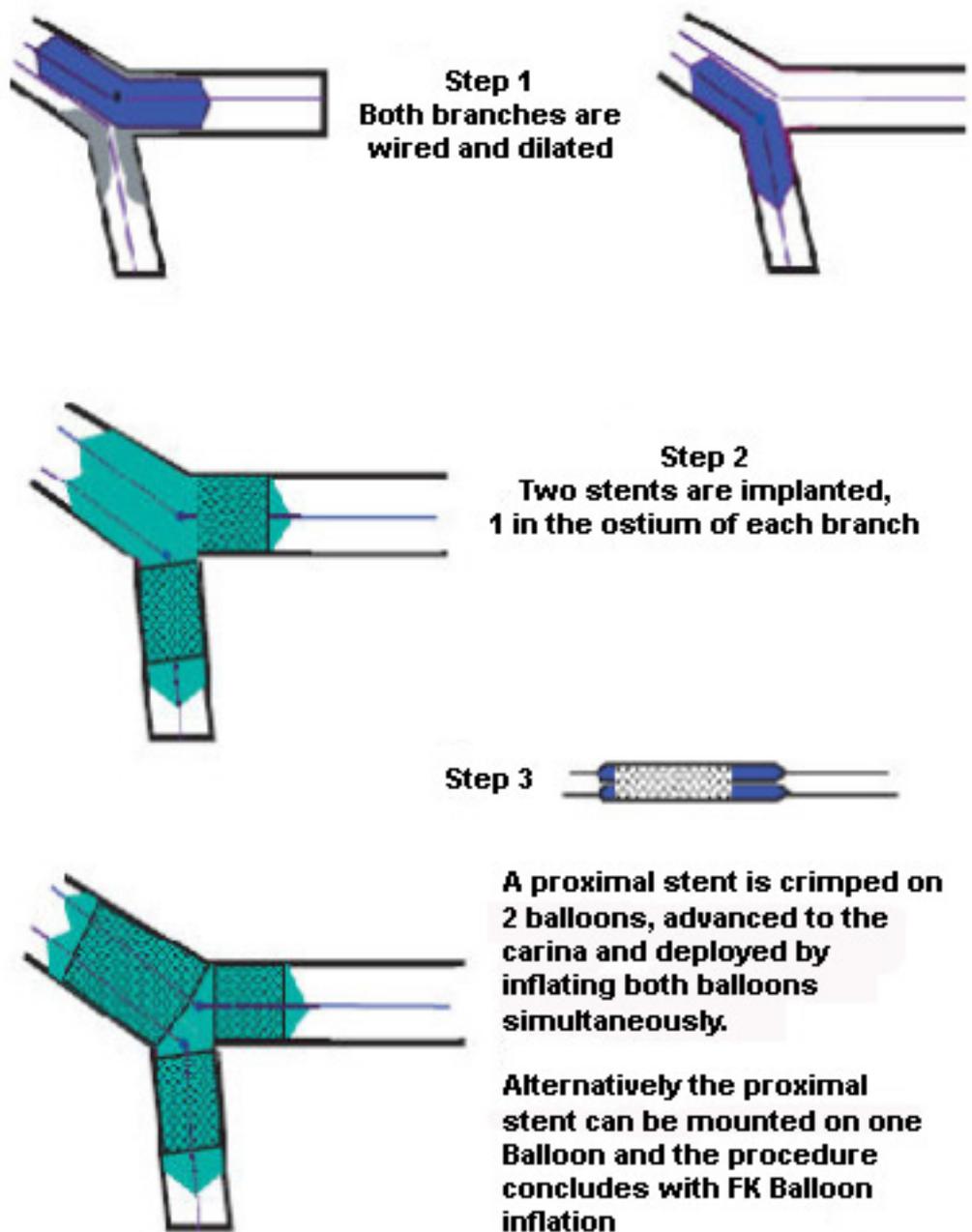


Figure 6: The “Y” stenting technique. FK - final kissing



Methods

Study Population

The study was done retrospectively and prospectively between January 2010 and January 2012. A total of 92 patients underwent coronary stenting at Sulimaniya Center For Heart Disease for the treatment of symptomatic bifurcation lesions that had a >50% diameter stenosis in both the parent vessel and the ostium of the contiguous side branch and the lesions confirmed by two interventional cardiologists.

Informed consent for coronary angiography and stent implantation was obtained from all patients.

Revascularization Procedure and Stenting Strategies

Before angioplasty, the patient was on maintenance dose of oral aspirin with clopidogrel loading dose (600mg) given a day before the intervention and intravenous bolus of heparin

(70-100Unit/kg) were administered to all patients at time of intervention.

Angiograms in multiple views were obtained using the transfemoral approach.

After placement of the guiding catheter, two wires were inserted in the distal bed of the two branches.

Balloon angioplasty was conducted by sequential inflation of a semicompliant balloon in each branch.

Two strategies for bifurcations were available

A less complicated angioplasty strategy that used stenting in only the parent vessel of the bifurcation lesions (group A) and a more complicated angioplasty treatment strategy that included stenting of both branches of bifurcation lesion (group B) was undertaken.

As a general rule, both lesions were stented when the reference vessel size of the side branch was greater than 2.0 mm. Group A was comprised of 70 patients and Group B was comprised of 22 patients.

For group A, the stent was implanted in the parent vessel and then balloon dilatation was performed through the stent struts into the side branch. Simultaneous kissing balloon inflation was frequently performed on completion of the procedure. For group B, stent placement for both vessels was performed using one of the previously reported techniques (Figures 1, 2, 3, 4, 5, & 6).

Angiographic Analysis and Clinical Follow-up

We used a computer-based QCA-CMS system version 4.0 for quantitative coronary angiography (QCA), with the dye-filled catheter as a reference. Reference diameter, lesion length and minimum luminal diameter (MLD) were measured before and after angioplasty, and at the time of follow-up angiography.

The diameter of the normal segment proximal to the traced area in the parent vessel was used to determine the parent vessel diameter, and the side branch reference diameter was determined from the diameter of the traced segment in the normal segment distal to the lesion in the branch. Lesion length was defined as the distance from the proximal to the distal shoulder of the lesion. Angiographic success was defined as post-PCI percent diameter stenosis less than 20% with at least Thrombolysis in Myocardial Infarction (TIMI) flow 3 in both the parent vessel and side branch. Procedural success was defined as the achievement of angiographic success in the absence of any in hospital major adverse cardiac events (MACE), which include death, myocardial infarction (MI) or

emergency percutaneous treatment or coronary artery bypass grafting (CABG). Emergency coronary bypass surgery was defined as bypass surgery involving immediate transfer of the patient from catheterization laboratory to the operating room or within 24 hours of the procedure.

Follow-up angiography was planned for all patients at six months or earlier, if there was a clinical indication.

Restenosis was defined as $\geq 50\%$ diameter stenosis of the treated lesion.

Clinical follow-up was obtained around six months after treatment by direct patient interview.

Target lesion revascularization (TLR) was defined as any repeat percutaneous intervention to the target lesion (parent or side branch) or any coronary bypass graft to the treated vessel during follow-up.

Six-month total MACE was defined as death, MI or target lesion revascularization during the follow-up period, plus in-hospital MACE.

Statistical Analysis

Data are expressed as mean SD for continuous variables, as numbers with percentage for categorical variables. Continuous data were compared using unpaired Student t test, and frequencies were compared using the chi-square or Fisher's exact test. A p value of 0.05 was considered statistically significant.

Results

Between group A and group B, there was no difference in baseline clinical characteristics except for the extent of coronary artery disease or the location of bifurcation lesion; more patients with one vessel disease were included in group A and more patients with two vessel disease were included in group B. (See Table 1 Baseline Characteristics - next page)

Baseline angiography characteristics of the parent vessel were similar in both groups. For side branch the vessel size and lesion length were greater in group B than Group A (3.5 ± 0.5 vs 2.0 ± 0.5 , $p=0.140$; 20.0 ± 10.0 vs 10.0 ± 0.5 , $p=0.001$). (See Table 2)

In group B, the modified T technique and crush technique was used in the majority of patients. The procedure for Group B needed more stents (2-3) and longer time than Group A (60 ± 15 vs 45 ± 15 , $p=0.001$). The total stent length per patient was longer in Group B than Group A (38 ± 15 vs 38 ± 10 , $p=1$). The final balloon/vessel ratio was similar in the two groups. Higher inflation pressure was applied in group B than in group A for both the parent vessel and the side branch (16 ± 4 vs 13 ± 3 , $p=0.07$; 10 ± 4 vs 8 ± 4 , $p=0.07$). All procedures were completed with simultaneous kissing balloon inflation in group A and B.

The angiographic follow-up rate for group A and group B were only done for those who were symptomatic (2 of group A and 3 of group B) and where there was found lesions in other arteries not the target artery that stented.

Follow-up QCA measurements of the parent vessel were larger in group B (3.5 ± 0.5 vs 3.0 ± 0.5 , $p=0.573$). Patients of group B had side branches with a larger reference vessel size compared with patients of group A (2.5 ± 0.5 vs 2.0 ± 0.5 , $p=0.573$). There was no difference between the two groups in the MLD. The angiographic restenosis rate was (0%) for patients in group B and (0%) for those in Group A. Clinical follow-up was accomplished in all patients.

The TLR rate was similar in the two groups (0%). Six-month total MACE, including TLR was similar in the two groups.

Table 1: Baseline clinical characteristics

Variables	Group A (70) N (%)	Group B (22) N (%)	P value
Hypertension			
Yes	30 (42.8)	15 (68.1)	0.06
No	40 (57.2)	7 (31.9)	
Diabetes			
Yes	5 (7.1)	5 (22.8)	0.09
No	65 (92.9)	17 (77.2)	
Hypercholesterolemia			
Yes	33 (47.1)	5 (22.8)	0.075
No	37 (52.9)	17 (77.2)	
Smoker			
Yes	28 (40)	18 (81.9)	0.001
No	42 (60)	4 (18.1)	
Family history			
Yes	24 (34.2)	5 (22.8)	0.45
No	46 (65.8)	17 (77.2)	
Prior MI			
Yes	29 (41.4)	18 (81.9)	0.002
No	41 (58.6)	4 (18.1)	
Previous angioplasty			
Yes	2 (2.8)	5 (22.8)	0.009
No	68 (97.2)	17 (77.2)	
One vessel			
Yes	35 (50)	2 (9.1)	0.001
No	35 (50)	20 (90.9)	
Two vessels			
Yes	20 (28.5)	8 (36.4)	0.67
No	50 (71.5)	14 (63.6)	
Three vessels			
Yes	15 (21.4)	12 (54.6)	0.006
No	55 (78.6)	10 (45.4)	
LAD diagonal			
Yes	10 (14.2)	4 (18.2)	0.92
No	60 (85.8)	18 (81.8)	
LCX / OM			
Yes	15 (21.4)	6 (27.3)	0.77
No	55 (78.6)	16 (72.7)	
RCA / PDA			
Yes	45 (64.2)	12 (54.6)	0.57
No	25 (35.8)	10 (45.4)	
Mean \pm Std. Deviation			
Variables	Group A (70) N (%)	Group B (22) N (%)	P value
Age	46 \pm 11	52 \pm 10	0.031
LVEF	48 \pm 10	45 \pm 10	0.329

Table 2: Baseline angiographic characteristics

Variables	Mean \pm Std. Deviation		P values
	Group A (70)	Group B (22)	
Parent vessel			
Reference vessel (mm)	3 \pm 0.5	3 \pm 0.5	1
MLD (mm)	1 \pm 0.5	1 \pm 0.5	1
%DS (%)	75 \pm 5	75 \pm 5	1
Lesion length (mm)	20 \pm 10	30 \pm 15	0.001
Side Branch			
Reference vessel (mm)	2.0 \pm 0.5	3.5 \pm 0.5	0.140
MLD (mm)	0.5 \pm 0.3	0.5 \pm 0.3	1
%DS (%)	75 \pm 10	70 \pm 10	0.008
Lesion length (mm)	10 \pm 0.5	20 \pm 10	0.001

Table 3: Procedural characteristics

Variables	Group B (22) N (%)	Group A (70) N (%)
Angiographic success (%)	100	100
Procedural success (%)	100	100
In-hospital MACE (%)	0	0
Death	0	0
MI	0	0
CABG	0	0

Table 4: Angiographic and clinical follow-up

Variables	Mean \pm Std. Deviation		P values
	Group A (70)	Group B (22)	
No. of patients who underwent angiographic FU	2	3	0.146
Angiographic FU duration (mo)	12 \pm 6	12 \pm 6	1
Angiographic restenosis (%)	0	0	
Parent vessel MLD (%)	3.0 \pm 0.5	3.5 \pm 0.5	0.573
Side branch MLD (mm)	2.0 \pm 0.5	2.5 \pm 0.5	0.573
No. of patients who underwent clinical FU	70	22	
Clinical FU duration (mo)	12 \pm 6	12 \pm 6	1
Re-PCI	2	3	0.146
Six month total MACE	0	0	

Discussion

The optimal strategy for percutaneous treatment of bifurcation lesions is one of the most widely debated issues in interventional cardiology.

To date, available data suggest that, in clinical practice, single stent implantation, when feasible, is not inferior to double stenting techniques.

However, it is also well established that a remarkable proportion of treated lesions may require double stenting to obtain angiographic success.

The relevance of the involvement of atherosclerosis in bifurcation lesions is underlined by the existence of a number of attempts to categorize these lesions, including the Duke, the Sanborn, the Safian, the ICPS, and the Medina classifications. Among these, the Medina classification is considered the most simple and has recently been recognized in a consensus report by European experts as the gold standard for bifurcation evaluation.

The best classification, however, should not only provide a simple description of the anatomy but should also help in selecting the appropriate stent implantation strategy.

Taking these assumptions as a starting point, we used the Medina classification prospectively in a consecutive series of patients with bifurcation lesions undergoing PCI in order to assign them to a single or double stenting strategy.

In our study, the angiographic results obtained in MV and SB with a single stent in group A did not differ from that obtained with 2 stents in the group B patients. Similar results have been obtained in other studies (7,8,9,10,11,18) in which double stenting of bifurcation lesions is not advantageous and seems also to have a detrimental impact on major clinical outcomes.

On the other hand, the selection of double stenting techniques in patients with the more complex Medina 1,1,1 lesions resulted in a high rate of angiographic success and warranted, over the long term, a clinical outcome that was comparable to that observed in patients with less complex bifurcations treated with single stenting.

The selection of Medina 1,1,1 further restricted the number of patients considered for double stenting in the present study compared to the classical definition of "true bifurcation" which also comprises Medina 1,0,1 and Medina 0,1,1 lesions.

The latter lesions were successfully managed with a single stent in the present study. Moreover, some patients with Medina 1,1,1 lesions may be treated by single stenting due to the presence of a SB anatomy that is not ideal for a second stent implantation (diffuse disease with absence of an appropriate stent landing zone, distal SB occlusion, presence of further division of the SB in multiple distal branches, etc).

Observational studies (8,9,10) have shown that up to 90% of jailed side branches are usually clinically silent and probably do not affect long-term clinical event-free survival and this may explain why most of the patients are asymptomatic even with jailed SB.

All together, these observations support the concept that only a minority of bifurcation lesions should be considered for double stent implantation techniques.

Finally, as previously shown by other studies (9,10) DES implantation seems to be necessary to treat bifurcation lesions as it is associated with a lower TLR rate and is an independent predictor of better clinical outcome as compared to BMS.

Study Limitations

- 1- In this study, we have arbitrarily hypothesized that the use of double stenting techniques may be reserved to treat Medina 1,1,1 lesions. This assumption has not been previously well established and remains controversial.
- 2- The failure to use dedicated software for the quantitative analysis of bifurcation lesions and the lack of systematic angiographic follow-up represent important limitations in the comparison of the acute angiographic results and the long-term outcome.

Conclusions

- 1- The selection of a single stenting strategy based on the absence of Medina 1,1,1 lesions is associated with a high rate of optimal angiographic results and with a low rate of bailout SB stenting.
- 2- The selection of a double stenting strategy only in patients with Medina 1,1,1 lesions is associated with a high rate of optimal angiographic results.
- 3- Both stenting strategies selected on the basis of the Medina classification are associated with a low rate of MACE.
- 4- In the absence of randomized trials, our observational study might help in the selection of a personalized stenting strategy for bifurcation lesions.

lesions involving bifurcation branches with diameter almost as big as that of the main branch or jeopardization of the side branch with TIMI flow less than three.

Recommendations

- 1- For treatment of bifurcation lesions a complex strategy of stenting both vessels provides no advantage in terms of procedural success and late outcome versus simple strategy of stenting only the parent vessel.
- 2- Double stenting of both main vessel and the side branch vessel in bifurcation lesion could be considered in cases of very big bifurcation branch, such as main stem lesions or lesions involving bifurcation branches with diameter almost as big as that of the main branch or jeopardization of the side branch with TIMI flow less than three.

Abbreviations and Acronyms

CABG = Coronary artery bypass graft surgery

DCA = Directional coronary atherectomy

MACE = Major adverse cardiac events.

MI = Myocardial infarction

MLD = Minimum luminal diameter

QCA = Quantitative coronary angiography

TIMI = Thrombolysis in myocardial infarction

TLR = Target lesion revascularization

LMS = Left main stem.

LAD = Left anterior descending artery.

LCX. = Left circumflex artery.

RCA = Right coronary artery

PDA = Posterior descending artery.

D1 = First Diagonal.

OM = Obtuse marginal.

DS% = Percent diameter stenosis.

LVEF = Left ventricular ejection fraction.

SD = Standard deviation.

FU = Follow up.

PCI = Percutaneous coronary intervention.

SB = Side branch.

MV = Main vessel.

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Agreement Between Direct Smear Microscopy and GeneXpert MTB/RIF in Diagnosis of Pulmonary Tuberculosis Among Patients Attending Consultary TB Clinic, Kirkuk

Bushra Mohammad Mahmoud (1)
 Suheila Shamse Elden Tahir (2)
 Mohammed Abdul-Aziz Kadir (3)

(1) Bushra Mohammad Mahmoud, MS.c,
 Microbiology,
 Kirkuk, Iraq
 Consultary Clinic for Chest and
 Respiratory Disease,
 Kirkuk, Iraq.

(2) Suheila Shamse Elden Tahir, MS.c ,
 Family & Community Medicine,
 Consultary Clinic for Chest and
 Respiratory
 Disease,
 Kirkuk, Iraq

(3) Mohammed Abdul-Aziz Kadir, Ph.D.,
 College of Medicine,
 Kirkuk University,
 Kirkuk, Iraq.

Correspondence:

Bushra Mohammad Mahmoud, MS.c, Microbiology,
 Consultary Clinic for Chest and
 Respiratory Disease,
 Kirkuk, Iraq

Email: gkirkuk@gmail.com

ABSTRACT

Background: Tuberculosis is one of the deadliest diseases causing morbidity and mortality worldwide, as it infects 9 million and kills 3 million annually, yet one third of the world population is infected with TB. This study was planned to compare the accuracy of PCR with direct sputum smear among patients who attended the TB Clinic in Kirkuk.

Patients and Methods: A cross sectional study recruited 958 patients who presented to chest and respiratory diseases clinic for the period from 4th of December till 30th June 2014 for detection of Mycobacterium tuberculosis by direct smear microscopy. Out of these 321 samples were tested by gene Xpert; they were stratified according to site of disease to 249 pulmonary and 72 extra pulmonary cases.

Results: It was found that the percentage of direct smear positive was 3.03% while that for PCR was 11.5%. The percentage of Rifampin resistance was (10.8%) among positive cases.

Conclusions: It is concluded that GeneXpert/MTB/RIF is superior to direct AFB in detecting Mycobacterium tuberculosis, by time and detecting resistance in less than 2 hours.

Key words: Direct smear microscopy, GeneXpert, pulmonary tuberculosis

Introduction

Tuberculosis is one of the most deadly diseases worldwide; about 2 billion people in the world carry latent TB; more than nine million will become ill and about three million will die (1).

Poor health system, limited laboratory capacity for case detection, treatment barriers and complications make TB a major challenge for public health programs (2).

Detection of Mycobacterium species is mainly detected by Ziehl-Neelson stain which employs acid-fast staining technique. First the sample is inverted in hot carbolfuchsin that stains red, then the sample is stained with acid-alcohol and counter stained with methylene blue. On examination, the bacteria appear bright red against a blue background (3).

The Xpert MTB/RIF assay is a fully automated molecular diagnostic test for TB disease, developed in partnership with Cepheid Inc, the foundation for innovative new diagnostics (FIND); the university of medicine and dentistry of New Jersey (UMDNJ) and the national institutes of health (NIH). It can detect rifampin resistance from sputum specimens in less than 2 hours and minimizes staff manipulation and biosafety risk (4).

Objectives

The study was conducted to:

1. Show the agreement of conventional and new methods in detecting Mycobacterium in sputum and other body fluids.
2. To detect rifampin resistance among smear positive cases.

Patients and Methods

A cross sectional study recruited 72 patients who presented to Chest and Respiratory Disease Clinic in Kirkuk for the period between 4.12.2013-4.2.2014. Sputum samples were obtained from each patient for direct smear microscopy and GeneExpert for detection of Mycobacterium tuberculosis, then agreement in results of both investigations was assessed.

Regarding sputum sampling each TB suspect was requested to submit two sputum specimens, one for conventional smear plus Xpert MTB/RIF and the second for the conventional smear alone. When the results of Xpert were positive the Rifampin sensitive patients were registered as Cat 1 or Cat 2 according to drug history. If the specimen proved to be RIF/ resistant, it would be subjected to culture and drug sensitivity test (DST).

Results

Table 1 shows that during the period of the study; a total of 958 sputum samples were examined for direct smear microscopy to detect the presence of mycobacterium tuberculosis.

Regarding GeneXpert (PCR), a total of 321 were examined; all smear positive cases, highly suspected smear negative TB cases and other body fluids referred by public and private sectors were included in the study.

Regarding gender difference, the ratio of male to female was 1.9:1. The percentage of positive cases by DSM was 3.03%, while in PCR it was 11.52%.

It was clear that there was significant statistical difference between the two tests ($P < 0.05$).

It is clear that PCR has detected higher positive cases than the conventional method AFB; also it is obvious that males are affected more than females.

It was found that the proportion of positive cases in GeneXpert was greater than that with AFB. There was a statistically significant difference between the two methods ($P < 0.007$), as indicated in Table 2.

Table 3 illustrates the distribution of positive cases detected by PCR. Out of 321 samples tested for detection of MTB by GeneXpert, 37 cases were positive, distributed as 35 pulmonary TB and 2 extra pulmonary (pus); apart from these 2 extra pulmonary samples, all other samples were negative.

Among the 37 positive cases only 4 (10.81%) cases were proved to be resistant to Rifadin by the new test (GeneXpert). The percentage of Rifadin resistance was 11.42% among pulmonary cases.

It is obvious from table 3 that PCR has advantage to detect Rifampin resistance cases within less than 2 hours.

Regarding other body fluids, all were negative when tested by PCR.

Results

Table 1: Distribution of cases in DSM & PCR according to Gender

Gender	DSM (958)			PCR (321)		
	Positive (%)	Negative	Total	Positive (%)	Negative	Total
Male	19 (3.67)	499	518	23 (13.07)	153	176
Female	10 (2.27)	430	440	14 (9.65)	131	145
Total	29 (3.03)	929	958	37 (11.52)	284	321

Table 2: Agreement between DSM and GeneXpert for study sample

GeneXpert	DSM					
	Positive		Negative		Total	
	N	%	N	%	N	%
Positive	11	3.43	26	8.10	37	11.53
Negative	0	0	284	88.47	284	88.47
Total	11	3.43	310	96.57	321	100.0

Table 3: Distribution of types of TB cases according to gender and Rifadin resistance detected by PCR

Type of TB	P.C. R. 321						
	Total	Positive	Negative	Male	Female	RF (S)	RF (R)
Pulmonary	249	35	214	137	112	31 (88.57%)	4 (11.43%)
Extra pulmonary	72	2	70	39	33	2	-
Total	321	37	284	176	145	33 (89.19%)	4 (10.81%)

RFS=Rifadin sensitive;
RFR=Rifadin resistant

Discussion

WHO have started the largest roll-out of GeneXpert, as detecting TB rapidly and identifying drug resistance on the spot is an essential step to improve care of the infected people and avoid transmission in the community (5).

The higher percentage of positive cases among males than females detected by PCR, is in agreement with WHO report as males have much higher rates than females.

In a study conducted in Vantanilla, Lima, in 2005 showed that tuberculosis globally kills more women than any other single infectious disease. It is noted that 70% of the poor are women and they face obstacles in seeking medical advice and care (6).

Detection of Mycobacterium TB by PCR was increased in comparison with direct sputum smear; this result is in agreement with a study done in Brazil and published as Clinical trials during 2011.

In a survey conducted among prisoners, in Malaysia, it was documented that a single GeneXpert assay proved to get 53% sensitivity, 100% specificity and concluded that single test yields low screening sensitivity (7).

WHO technical report has concluded that PCR is the most common method of amplification, in spite of many other methods for rapid test for diagnosing MTB which are commercially available as in Roche (Amplicor PCR-FDA-approved), Becton Dickson CBD probe Tec, Standard Displacement amplification (SDA), Gene probe (Amplified Mycobacterium tuberculosis Direct (AMTD), Transcription machinated amplification (TMA) in addition to the assay used in the current study under the commercial name Cepheid (GeneXpert MTB/RIF) nested real time PCR (8).

In addition to excellent sensitivity with smear positive specimens, the device can identify 72.5% of smear negative culture positive samples from single tests. WHO recommended that the GeneXpert MTB/RIF is suitable for use at district and sub -district levels (9&10).

Detection of drug resistance in comparing the conventional (AFB) test and new PCR, showed that males had higher resistance than females although the number of cases is small as tuberculosis is a rare disease and among all notified cases resistance occupies 3% of the TB cases (11).

In MTB, mono resistance to (RIF) is rare and almost 90% of resistant cases to RIF are also resistant to INH so a positive result of RIF is a strong surrogate of MDR-TB, and in resistant isolates it has been shown that from to 95% to 98% RIF resistance is caused by mutations in the proB gene encoding the RNA polymerase B-unit (12&13).

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