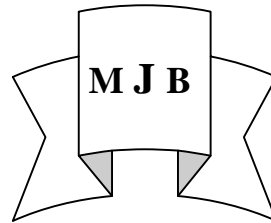


Diabetes Mellius is The Predominant Risk Factor of Dupuytren's Disease in Babylon Aprospective Matched Case Control Study

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Abstract

In Merjan teaching hospital we recorded (3200) cases of hand complaints in period from Nov. 2002 – June 2004. Of them, Dupuytren's hand diseases were represented in (84) cases 2.6% the (study group). which were investigated for the association and severity, with diabetes mellitus ,smoking and other risk factors , this study group also were matched for age and gender with other three groups :

Group I: (230) Patients who had diabetes mellitus for more than (10) years duration, who were neither smokers nor alcoholic or epileptics.

Group II: (300) community controls , who were smokers “ more than 20 cigarette per day for more than 10 years “,who were neither diabetics nor alcoholic or epileptics .

Group III: (420) community controls , who were randomly selected .

The results showed that the Dupuytren's disease is strongly associated with diabetes mellitus, where in study group: 25% of Dupuytren's were diabetics, while 11.9% of Dupuytren's were smokers 2.3% were epileptics on phenytoin.

Group I: 9.5% of diabetics patients had got Dupuytren's

Group II :2.6% of smokers had got Dupuytren's disease .

Group III: The total number of Dupuytren's disease were (7) cases 1.6 % . Grouped as follow (4) cases were diabetics , (1) case was smokers. And (2) cases had not apparent risk factors .

On basis of the results, the Dupuytren's disease is strongly associated with diabetes mellitus, although milder , appeared earlier in age than other risk factors and mostly bilateral.

There was no significant difference regarding incidence between different types of jobs , or between dominant hands and non dominant ones .

The purpose of the present prospective case matched study , is to elucidate the role of diabetes mellitus as main predisposing risk factor of Dupuytren's disease In Babylon.

الخلاصة

في مستشفى مرجان التعليمي تم جمع (٢٠٠٠) حالة من أمراض وإصابات الجهاز الحركي لليدين في الفترة ٢٠٠٢-٢٠٠٤ وتم فرز (٨٤) حالة من حالات مرض ديبوترين للكف (في مختلف مراحلها) وتم دراسة شدة الحالة المرضية وعلاقتها بالعوامل

المراقبة أو المشاركة للمرض مثل داء السكري والتدخين والكحول وعوامل أخرى وكذلك علاقة المرض بنوع العمل وشدته وتمت مقارنة النتائج مع ثلاث مجاميع متجانسة من حيث العمر والجنس .
 المجموعة الأولى:- ٢٣٠ حالة من مرض السكر الذين لديهم تاريخ مرضي أكثر من ١٠ سنوات وهم ليسوا مدخنين أو كحوليين .
 المجموعة الثانية:- ٣٠٠ حالة من المدخنين لأكثر من عشر سنوات بمعدل أكثر من عشرون سيجارة في اليوم وهم ليسوا بمرضى السكري وليسوا كحوليين.
 المجموعة الثالثة:- ٤٢٠ مريض تم اختيارهم بصورة عشوائية .
 وتبين من النتائج بأن داء السكر هو أهم عامل مرافق أو مشارك في تكوين مرض ديبوترين في بابل وان المرض معتدل بشدته ما عدا عند المرض الغير منتظم أو غير المسيطر على علاجهم.
 كما لا يوجد هنالك فرق ملحوظ بنوع العمل وشدته.

Introduction

Dupuytren's disease "Palmar fibromatosis" is a fibromatous hyperplasia of the palmar aponeurosis , which is characterized by nodular thickening of the fascia , with progression to flexion contractures of one or more digit mainly ring and little fingers[1]

Dupuytren's disease is considered the [classical)) hand illness of the north . It affected people of Viking descent throughout the whole of northern Europe , where as It is considered rare or virtually unknown in middle east and oriental regions as many European authors stated [2,3]

Dupuytren's disease of the hands affect about 10% of men over the age of 65 years in north Europe , and has a strong genetic predisposition , but exogenous factors may initiate or aggravate the condition in susceptible individual [4] .The basic

cause of the disease is obscure , but the micro vascular insufficiency and ischaemia is the corner stone in initiating pathological events of Dupuytren's disease , this microvascular ischaemia may be triggered by aging , genetic factor , gender, or diseases like diabetes mellitus ,and/or alcohol , smoking [4]. leading to localized ischaemia and the generation of oxygen free radicals with a positive feed back mechanism has been proposed : free radicals derived from endothelial cell damage the surrounding tissue and stimulate the proliferation of fibroblast which synthesize collagen , leading to further microvascular narrowing and local ischaemia [3,4] .

Historical review

The first descriptor of Dupuytren's disease has been credited not to Guillaume Dupuytren , but to Felix

plater of Basel Switzerland (1536 – 1614). Plater described the case of a stone cutter who sustained a severe traction injury to the small finger and subsequently presented with a fixed flexion contracture of the digit. This case has been cited as the first record of Dupuytren's disease.

Dupuytren's name likely became affixed to the disease for a variety of reasons, not the least of which was his stature as the most surgeon in Europe at the time.

Dupuytren's publications described not only the anatomic Pathology but also the clinical presentation, natural history, surgical technique, post operative care, response to treatment and long term follow up [3].

Patients and Methods

At Merjan teaching hospital we gathered all hand's compliant (3200) cases, then we followed and investigated "84"cases of Dupuytren's disease of the hand "study group", in period from Nov.

2002 – to June 2004 .All cases were diagnosed on clinical basis . All clinical stages of the disease progression, from (simple palmer nodules, Subcutaneous thickening with cord like formation and skin puckering,

to actual flexion contracture of the digit) were included in this study.

The analysis was directed to age at onset, gender occupation, present and past medical history, family history of Dupuytren's, Association of risk factors as alcohol, smoking, epilepsy, and diabetes mellitus, whether disease affect one hand or bilateral involvement .and in unilateral involvement which hand affected the dominant hand or the other one .

This study group was matched by gender, age with other three groups:

Group I:- included (230) of known cases of diabetes mellitus for at least (10) years duration who were investigated at diabetic clinic in Merjan teaching hospital .(211) cases were non insulin dependent and (19) cases were insulin dependent .

All the patients of this group were neither smoker nor alcoholic or epileptics.

Group II:- included (300) cases of community control group who were smoker more than 20 cigarette for more than 10 years duration , neither diabetics , nor alcoholics or epileptics .

Group III:- included (420) cases of community control group who were randomly selected .

Patients who had carpal tunnel syndrome , gout , and rheumatoid

arthritis had been excluded out of the study 'because it has been postulated that Dupuytren's disease could associate with carpal tunnel syndrome and gout ,while rheumatoid arthritis rarely associated with Dupuytren's disease [4].

All groups and study cases were investigated for presence of diabetes mellitus. "diagnosis was done when random blood glucose concentration was greater than 11 mmol / l. In doubt cases , when fasting blood glucose was between 6.1-6.9 mmol / l or random plasma glucose was between 7-11 mmol , in such cases oral glucose tolerance test was indicated .[5]

In diabetics patients questioners also included age of onset of diabetes mellitus duration of diabetes mellitus , whether the diabetes were insulin dependent or not , and the patients on regular treatment with controlled hyperglycemia or not .While smoking questioners included the age at which smoking habit was started, current or former smoking habit the average number of cigarette smoked per day , duration in year term .

Regarding alcohol consumption, for many socio – cultural reasons , it was difficult to measure the number of units per day or per week but were roughly classified into daily regular

drinker , irregular or occasional . only those who considered to be alcoholic 'regular daily drinker at least 3 units /day i.e. 30gram of alcohol / day for at least 5 years, were included in the study.

Results

Data analysis of Dupuytren's cases in all groups was done , which included 'gender ,mean age of onset , distribution of the disease according to age group , presence of any apparent associated risk factors "diabetes mellitus , smoking , alcohol ,and epilepsy" ,in addition to type of occupation and which hand was affected the dominant or non dominant hand in case of unilateral involvement.

Study group:

Data showed that the patient's age were ranging between (39–76) years with mean age was 64.5 years.

(72) cases were males and 12 cases were females male to female ratio was 6:1 . More than half of the cases "45"cases , (53.5%).were occurred between the age of 65-75 years " patient of 76 year old was included in this category .(30)cases (35.7%) were occurred between age of (55-65) years .(7)cases ,(8.3)% at the age of (45-55) years .While only (2) cases (2.3%) at age of (35-45) years.(21) cases 25% were diabetics (16)males

and 5 females.(15) cases were non insulin dependent , while 6 cases were insulin dependent .

Mean age was 58.5 years. Among diabetic patients there were 3 smokers “2males and one female “. All cases of diabetes mellitus had regular treatment and follow up with controlled hyperglycaemia, except (6) cases had irregular therapy with uncontrolled glycaemic level.

In general all diabetic's Dupuytren,had got mild form of the disease “subcutinuous nodular formation , cord like and skin pukering “.Except 7 cases , who had got contractures of ring finger i.e“advance stage of Dupuytren's disease “. 4 cases of these severe form had irregular treatment and impaired glycaemic control”.

Number of smokers among Dupuytren's patients was 16 cases 3 cases of them associated with diabetes mellitus 3.5% and 3 cases 3.5% associated with alcohol habit the remaining 10 cases (11.9%) were “ pure smokers” 8 cases were males and 2 cases were females .

Mean age of Dupuytren's patient in smoker was 63.5 years. (8) cases of Dupuytren's disease in smoker were in stage of contracture “advance stage “.

3 cases of Dupuytren's “with combined association of smoker and

alcohol, all of them were male and the Dupuytren's disease were in stage of contracture.

2 cases “2.3%” of Dupuytren's patients were associated with epilepsy who were on phenytion more than 5 years .In which the degree of Dupuytren's disease was in Contracture State.

The remaining Dupuytren's patients (45) cases (53.5%) had not associated with any apparent present risk factors .

Regarding the occupation of patients in this study group, all female cases were house keepers , 3 cases of them had , in addition, a clerical jobs.

While in the (72) male cases, we had (38) cases were a hard manual workers or farmers, while the other 34 cases had a clerical jobs.

16 cases (19.1%) had got bilateral hands involvement, “although were not necessary at the same stage of the disease progression “. (12) cases of bilateral hands involvement were diabetics . The remaining (68) cases (80.9%) had unilateral hands involvement (37) cases had dominant hands involvement, while in 31 cases the non-dominant hands were involved.

Group I: - of 230 cases of diabetes mellitus, we had 211 cases type II of diabetes mellitus, while only 19 cases

were type I. The total number of Dupuytren's disease in this group were 22 cases (9.5%), 17 males, 5 females. 16 cases were type II diabetes mellitus, and 6 cases were type I. Mean age of Dupuytren's cases was 56.5 years.

5 cases had got contracture "severe form of Dupuytren's 3 cases of these contracture cases had got irregular or impaired glycaemic control".

13 cases were hard manual workers or farmers, while the remaining 9 cases had clerical jobs.

13 cases had bilateral hands involvement, and 9 cases unilateral hands involvement, 5 cases in which dominant hand were involved while 4 cases the non dominant hands were affected.

Group II:- of 300 cases of smokers we had got 8 cases (2.6)% of Dupuytren's disease. 7 males and 1 female. Mean age was 62 years. 5 cases were hard manual workers or farmers while 2 cases had clerical jobs and one house keeper.

6 cases were in severe stage of the disease "contractures". One case with bilateral hand involvement.

4 cases were with dominant hand involvement while 3 cases were with non dominant hand involvement.

Group III:- of 420 cases, only 7 cases got Dupuytren's disease 1.6%. 6 males and 1 female mean age 61 years. 2 cases were known to be diabetics, and 2 cases were discovered to be diabetics, 1 case was smoker, 2 cases had not any apparent associated risk factors. 2 cases were with bilateral hand involvement (of them one case was diabetic).

In 3 cases the dominant hands were affected, while the non dominant hands involvement were in 2 cases. 4 cases were in severe state "advance contractures" of them 2 cases were smokers. 4 cases were hard manual workers, while 2 cases had clerical jobs and one case was a housekeeper.

Regarding Family history, we only recorded 3 cases (2.4)% of Dupuytren's disease in first degree relatives of all Dupuytren's patients in this study.

Discussion

In the study group, patient's data showed that Dupuytren's disease is highly prevalence in elderly, when more than half of patient's age was distributed between age of 65y-75y. So it is mainly a disease of elderly men, where male/female ratio was 6:1.

The age and gender pattern of the patients were comparable to previously noted studies [3].

Although in many previous studies and literatures the ratio of male/female, even higher in favor of male and might reached 10:1. [6].

This age and gender pattern of the Dupuytren's patients in this study group also were applicable to other groups.

On the basis of the study, long standing diabetes mellitus is considered the main associated apparent risk factor of Dupuytren's disease in Babylon.

The patients developed the disease nearly one decade earliest, with slight reduction in M/F ratio,

Mostly with bilateral involvement this may support the possibility of etiological insult of diabetes mellitus.

The high incidence of association of diabetes mellitus might be explained on the fact of microvascular complication with subsequent tissue ischaemia which is considered the corner stone in the etiological events of Dupuytren's disease [4,7,8].

Vast majority of Dupuytren's disease that associated with diabetes mellitus , had got milder form of the disease , while only few cases developed sever form "stage of contracture " , especially presented in uncontrolled diabetes .

Some believe that improvement and controlling glucose level , actually may not reverse the pathological processes

but may help to prevent further future progressions. Furthermore the Dupuytren's disease , like any of other diabetic musculoskeletal manifestation, could be the first mode of presentation of diabetes mellitus , so that whenever patient presented with Dupuytren's disease , it is preferable to screen him for possibility of diabetes mellitus [8].

Although smoking appeared to be associated with sever form of Dupuytren's hand disease

In our study , it appeared to be a second after diabetes mellitus as a risk factor associated with Dupuytren's disease .

This finding is not compatible with previously noted pattern or studies, where considering smoking and alcohol as main associated risk factor of Dupuytren's disease [4,9,10,11].

The associated of Dupuytren's disease and smoking may be related to changes in the blood flow of the hand, which is believed, that it reduced by 29% when inhaling two cigarettes. This support on what believed that there are several time of evidence, which link microvascular impairment and Dupuytren's disease. Since microvascular occlusion is characteristic histopathological finding of Dupuytren's disease .[3,4,12]

The association of alcohol with Dupuytren's disease in Babylon, extremely unrecognizable, and this clearly explained by Islamic rules which prohibit alcohol as habit in addition to that the Moslems female , not only from Islamic point of view , but from sociocultural view it is extremely rare if not at all , having alcohol as a habit .

That is why we have only 3 cases of Dupuytren's in study group ,all of them were heavy smokers as almost always the alcohol are smokers too, and this Dupuytren's could be explained by smoking as a risk factors, especially when there were no evidence of chronic liver disease as evidenced by liver function study in these alcoholic patients.

We have just two cases of epilepsy on phenytion the exact mechanism in which explained the association of phenytion and Dupuytren's disease still obscure , but could prolonged phenytion therapy appear to stimulate fibrosis in Dupuytren's disease and causing even gingival hypertrophy by stimulating fibroblast and increasing collagen production [1,13,14,15] .

Many believed that repeated occupational trauma to the hand and the type of manual labor performed by an individual may be act as

contributing factors, however on the basis of this study , the non dominant hands were nearly as involved as dominant one in unilateral cases in addition to that there were no significant differences in incidence of Dupuytren's disease according to type of job whether hard manual workers or clerical ones , all these making trauma alone is unlikely the cause as contributing factor on Dupuytren's disease .

Recording of family history of Dupuytren's hand disease , was extremely difficult , not only we have not , in our general medical practice a "family records" or a family doctor or general practioner through whom , we could obtained the exact family history of first degree relatives of patients with Dupuytren's disease , but also because it is difficult for patients to recognize the early stages of the disease , before the stage of the contracture that is why we have just 3 cases of Dupuytren's patients , who had got the same disease in one of their first digree relatives .

Moreover the Dupuytren's disease in those relatives cases might provoked or initiated by similar exogenous factor , "where as two cases had got diabetes mellitus , and one case was a heavy smoker " and not on "inheritance basis

" especially if we know that the "inherited " or "primary

" Dupuytren's disease , from demographic point of view is inherited as auto somal dominant triat , and it is adisease of north Europe , a disease of Viking desent , and was spreaded through viking's invasions , which actually did not reached to the oriental regions that is why "inherited Dupuytren's" is virtually unknown or very rare in oriental regions.

Conclusion and Recommendations

- Among other risk factors,diabetes mellitus appeared the main one that contribute or associate with Dupuytren's disease .
- Dupuytren's disease in diabetic patient usually run in milder form, mostly bilateral and appears earliest in comparison to Dupuytren's disease of smokers.
- Controlling of glycaemic level is essential to prevent further progression of the Dupuytren's disease although it is not reversing the pathological state of Dupuytren's which already present.
 - Any patient presents with Dupuytren's should be screened for possibility of diabetes mellitus.
 - Dupuytren's disease is not recognized as an occupational disease.

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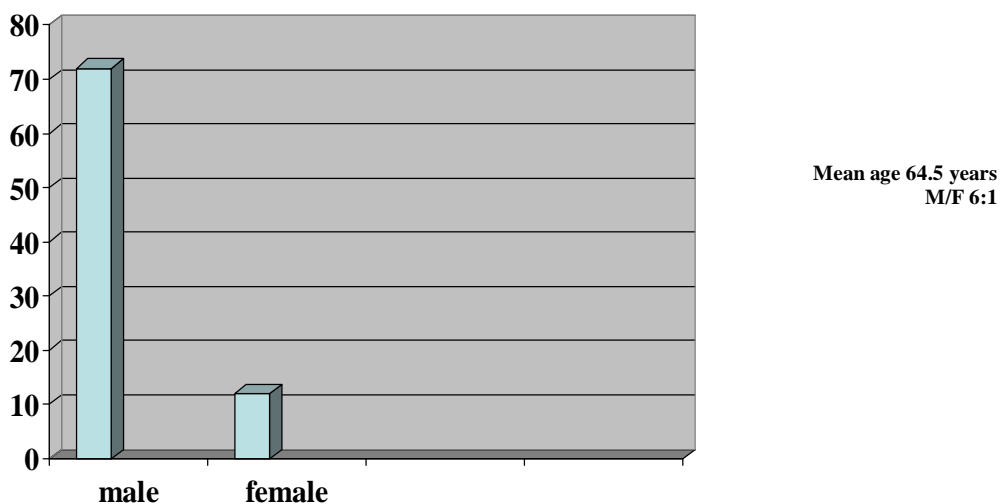
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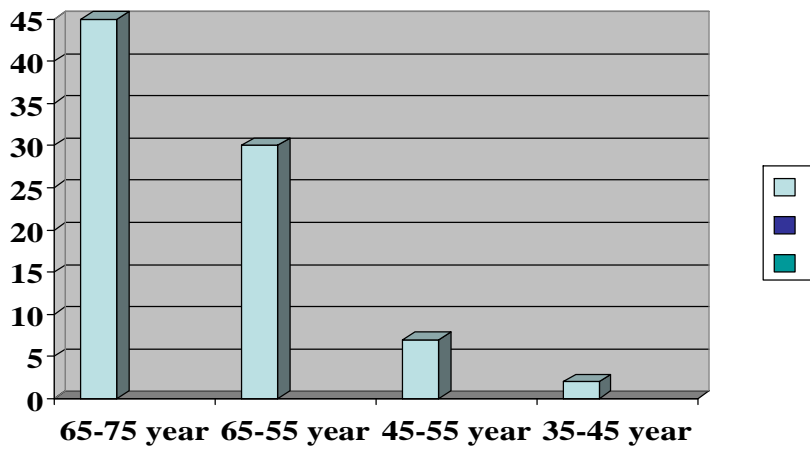
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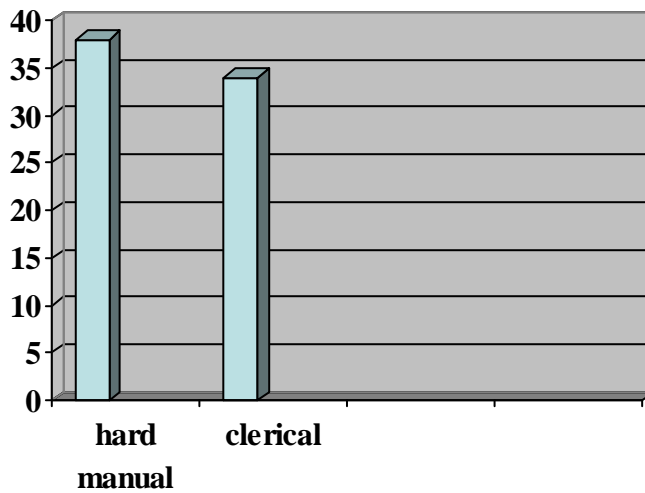
Bar chart(1) shows male & female incidence of Duputren’s disease in Babylon study



Bar chart(2) shows age distribution of patients (study group)

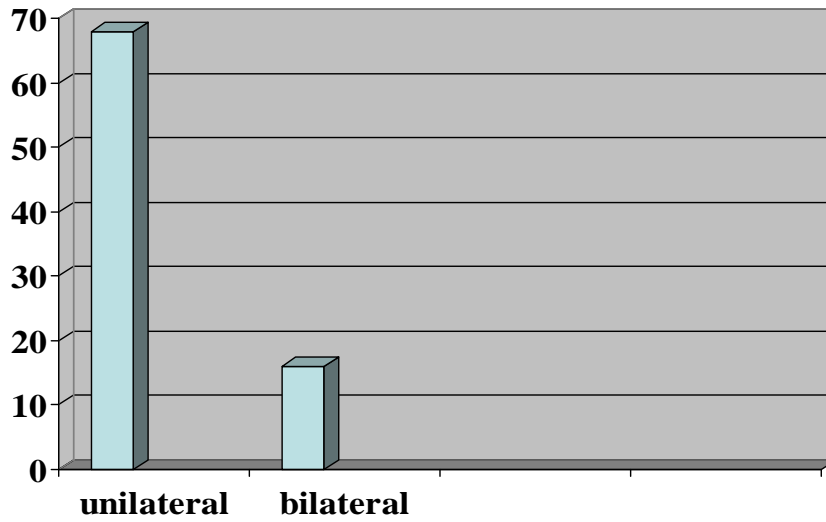


Bar chart (5) of job type of male patients (study group).

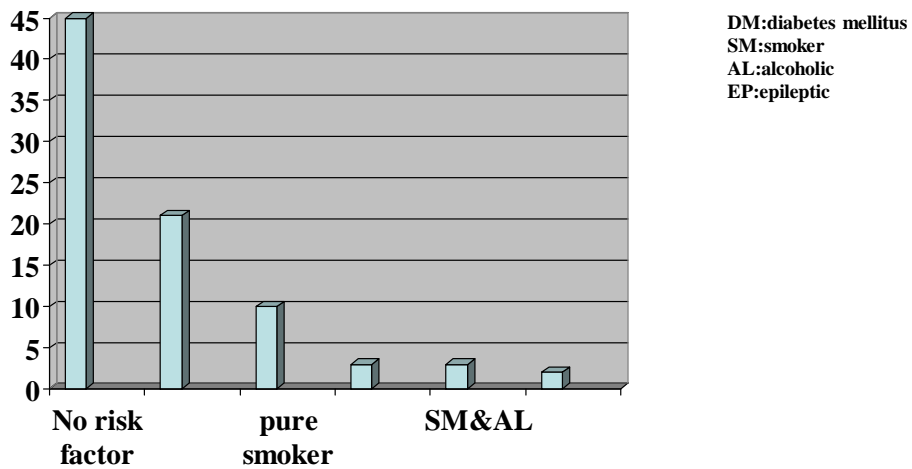


Note :in addition to house keeping in all female patients three of them had clerical job,too

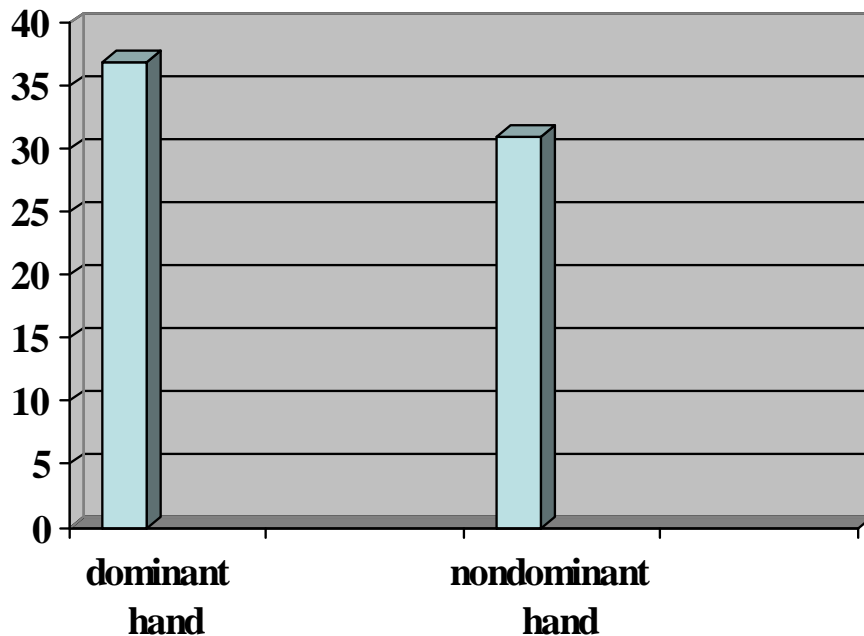
Bar chart(4) shows the way of hand involvement in Dupuytren's disease (study group).



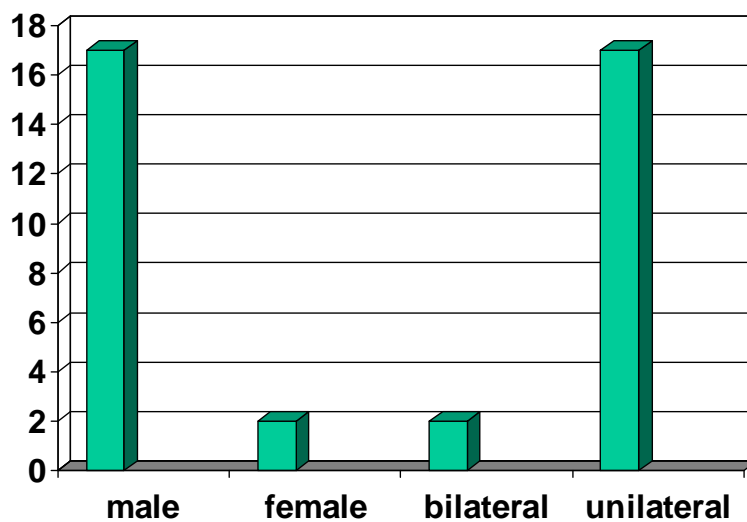
Bar chart(3) shows risk factors associated with Dupuytren's disease (study group).



Bar chart(6) shows the incidence of dominant and non dominant hand involvement (study group).

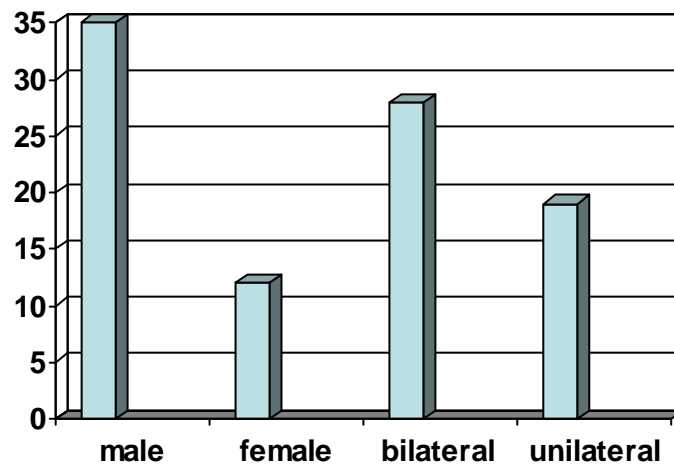


Bar chart (8) shows male and female incidence and way of hand involvement in Dupuytren's disease associated with smoking (pure) risk factor



M/F about 8:1
 Mean age 63.5 year.

Bar chart(7) shows males and females distrabution and way of hand inolvement in all diabetics patients with Dupuytren's disease (study group I,group III).



M/F about 3/1

Mean age :56.5 year