Iliofemoral Vein Thrombosis

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Classical treatment of "milk leg" results frequently in lifelong morbidity. Early surgical treatment gives promise of restoring normal venous circulation.

THROMBOSIS of the iliac and femoral veins produces a clinical picture which has been divided according to the extent of ischemic changes into two recognized entities, phlegmasia alba dolens and phlegmasia cerulea dolens. In the severe form of the disease (phlegmasia cerulea dolens), shock and death may occur, and gangrene of the involved extremity is a definite possibility. In both forms there is threat of pulmonary embolism. The time-honored methods of non-operative management of iliofemoral venous thrombosis result in prolonged morbidity following the acute onset of the disease, and, frequently, in lifelong disability as a result of injury to the valves of the deep veins of the extremity. Prompt recognition and surgical treatment of massive thrombosis of the iliofemoral venous system has resulted in improvement in morbidity and mortality, and it is surprising that this treatment has not been more widely adopted. This report will document experience with nine patients encountered in the past three years at the University Medical Center.

CASE REPORTS

1. M.M. (31-59-49) a 56-year-old white female was hospitalized on the Medical Service following an episode of pulmonary embolization. Her condition was complicated by hypertension and polycythemia. Several days after admission, the patient complained of sudden pain in the left leg and the involved extremity quickly became discolored. When seen by the Surgical Service several hours after the onset, the extremity was quite edematous and markedly discolored. Pulses were not palpable below the femoral area. A diagnosis of phlegmasia cerulea dolens was made and preparations were begun for operative treatment. Before the patient reached the operating room, severe shock occurred and over a several hour period the patient failed to respond to vigorous therapy and expired.

2. L.B. (31-80-78) a 65-year-old farmer was admitted to the Medical Center two weeks after the unfortunate experience with Case No. 1. This patient gave a history of injury followed by marked transient swelling of the left leg six months before admission. The patient had been well until two days before admission, at which time pain and swelling in the left leg began suddenly

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and progressed rapidly. At the time of admission, the entire leg was markedly swollen and discolored. Pulses were present but diminished in the extremity. Operation was carried out promptly under local anesthesia and consisted of extraction of thrombus material from the iliac and femoral veins through a groin incision. Prompt relief of pain occurred, and the swelling subsided rapidly over a two day period. The patient was discharged with minimal residual edema and had no swelling in the leg one month after discharge.

3. R.B. (32-53-01) a 63-year-old white male was admitted to the Hospital three weeks after suprapubic prostatectomy complaining of pain and swelling in the left leg beginning suddenly on the day of admission. The leg was edematous and discolored and no pulses were palpable below the femoral area. Operation under local anesthesia consisted of removal of a long thrombus from the iliac and femoral veins and resulted in prompt relief of the pain. The color of the extremity became normal within several hours, and the swelling subsided over an eight day period. Three months after operation, the patient had no evidence of venous disease in the involved extremity and remains well.

4. R.H. (32-56-70) a 77-year-old white female was admitted to the Medical Center for elective right femoral hernia repair. Herniorrhaphy was accomplished without incident, but mild pain occurred in the right leg on the fourth post-operative day. On the ninth post-operative day, pain and swelling of the leg suddenly became severe, and the leg was noted to be discolored and massively edematous. Operation was carried out under local anesthesia and consisted of thrombectomy of the iliac and femoral veins through a groin incision. Good relief of pain and rapid subsidence of swelling occurred, although the patient was noted to have mild residual swelling in the leg several months after operation.

5. G.R. (33-08-92) a 60-year-old white male was admitted to the Hospital for left inguinal hernia repair. This was accomplished uneventfully under local anesthesia, but in the post-operative period, severe upper gastrointestinal bleeding led to gastric resection for multiple gastric ulcers. He was discharged after a stormy post-operative course, but readmitted eight days later with severe gastrointestinal symptoms due to a perforated marginal ulcer necessitating total gastrectomy. Twelve days following this procedure, marked pain and swelling in the right leg occurred and was treated about eight hours after onset by venous thrombectomy under local anesthesia. Prompt relief of pain was noted, and the leg returned to normal size when compared with the opposite extremity in six days. The post-operative course with regard to the legs was uneventful, and the patient remains well.

6. H.D. (A14712) a 71-year-old white male was admitted to the Veterans Administration Hospital of the University of Oklahoma Medical Center with a history of several days of symptoms suggestive of influenza and sudden pain and swelling in the right leg on the day of admission. Operation on the day of admission consisted of iliofemoral venous thrombectomy under local anesthesia. Good relief of pain and rapid subsidence of swelling occurred, and the patient was discharged improved.

7. Q.H. (A14951) a 70-year-old white male was admitted to the Veterans Administration Hospital at the University of Oklahoma Medical Center from a nursing home where he had been bedfast for a month. Swelling in the right leg had been noted for three days, and at the time of admission, edema and discoloration of the leg was marked. Thrombectomy under local anesthesia was quite satisfactory in terms of relief of pain and swelling.

8. M.D. (33-73-22) a 76-year-old white female was admitted to the University of Oklahoma Medical Center complaining of sudden onset of pain and swelling in the left leg on the day of admission. On examination, the entire leg was swollen and discolored, although pulses were present. Thrombectomy of the iliofemoral venous system was accomplished under local anesthesia with immediate improvement in color of the extremity and rapid disappearance of edema.

9. C.R. (25-96-41) a 42-year-old white male was admitted to the University of Oklahoma Medical Center for treatment of a duodenal ulcer. Ten days after admission,
the sudden onset of pain, discoloration, and swelling in the right leg resulted in surgical consultation. Pulses were palpable but diminished in the leg and immediate operation was planned. While the patient was being transferred to the Operating Room carrier, massive pulmonary embolization occurred. Within three minutes of the recognized onset of pulmonary embolization, cardiac arrest occurred necessitating closed chest massage. In the Operating Room, the chest was opened rapidly. Cardiac arrest was present, and the right ventricle and pulmonary artery were dilated. It was not possible to delay treatment for the time required to prepare the pump oxygenator, and therefore, the pulmonary artery was opened, thrombus material extracted from it, and the pulmonary artery closed using manual inflow occlusion. A satisfactory heart beat was established but could not be maintained, and the patient died about one and one-half hours after the onset of pulmonary embolization. Unfortunately, autopsy permission was not obtained.

DISCUSSION

The etiology of intravascular thrombosis is unknown, and even a brief discussion of the extensive research concerning the problem is beyond the scope of this communication. A number of factors which apparently influence the development of intravascular thrombosis are appreciated, and clinically it is possible to group patients with massive iliofemoral thrombosis into several categories having similar predisposing factors. The most obvious mechanism of development of massive iliofemoral thrombosis is extension of the thrombotic process from veins in the calves of the legs. This apparently was the mechanism for development of iliofemoral thrombosis in several of the patients encountered in this series, and it is important to appreciate this mechanism as the results of surgical thrombectomy are not as satisfactory as in cases where the process begins in the iliofemoral system. In general, it has been possible to restore the venous system at least to the status preceding the development of massive iliofemoral thrombosis,

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although complete removal of thrombus from the calf plexuses is usually not accomplished.\textsuperscript{3,4} In a second group of patients, thrombosis of the iliac and femoral veins appears to result as an extension of thrombosis from pelvic veins. This apparently occurs in post-partum iliofemoral venous thrombosis where thrombosis at the site of placental separation may extend to pelvic veins and ultimately to the iliofemoral system. The same may be true following pelvic surgical procedures, although it is possible that direct injury to veins, position of the patient during operation, and perhaps other factors are operative in such instances. Primary thrombosis of the iliac and femoral veins apparently can occur during any illness or prolonged period of inactivity, and the mechanism for this is not well understood.

Finally, spontaneous thrombosis of the iliac and femoral system in patients who are active and apparently entirely well has been reported and was encountered in one instance in the present series.\textsuperscript{5,6,11} The possibility of direct trauma resulting in venous thrombosis is suggested by the patient in whom iliofemoral thrombosis followed hernia repair on the same side, although no injury to the venous system was recognized.

Iliofemoral thrombosis results in varying degrees of obstruction to venous outflow from the involved extremity. When thrombosis is extensive and/or when venous collateral circulation is deficient, venous pressure may rise to a level which precludes arterial inflow, and the clinical picture of ischemia is added. Gangrene may occur. Loss of fluid into the extremity (edema) may be large enough to cause shock and death (case 1).\textsuperscript{5,9}

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Age</th>
<th>Predisposing Illness</th>
<th>Involved Leg</th>
<th>Time Interval Onset to Operation</th>
<th>Results</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 31-59-49</td>
<td>56 F</td>
<td>Long chronic illness. Recent renal exploration. Pulmonary embolus prior to iliofemoral thrombosis.</td>
<td>Left</td>
<td>Died within 24 hours of recognized iliofemoral thrombosis.</td>
<td>Died within 24 hours of recognized iliofemoral thrombosis.</td>
<td>Operation should have been attempted.</td>
</tr>
<tr>
<td>2. 31-89-78</td>
<td>65 M</td>
<td>Injury to leg six months before with episode of pain and swelling.</td>
<td>Left</td>
<td>8 hours</td>
<td>Excellent at one month.</td>
<td>Probably had thrombophlebitis following injury.</td>
</tr>
<tr>
<td>3. 32-53-01</td>
<td>63 M</td>
<td>Suprapubic prostatectomy three weeks prior.</td>
<td>Left</td>
<td>8 hours</td>
<td>Excellent at three months.</td>
<td></td>
</tr>
<tr>
<td>4. 32-56-70</td>
<td>77 F</td>
<td>Right femoral hernia repair nine days prior. Mild pain in right leg five days prior.</td>
<td>Right</td>
<td>6 hours</td>
<td>Slight swelling of leg at five months.</td>
<td>No recognized trauma to vein at herniorrhaphy.</td>
</tr>
<tr>
<td>5. 33-08-92</td>
<td>60 M</td>
<td>Long illness with multiple operations.</td>
<td>Right</td>
<td>8 hours</td>
<td>Excellent at four months.</td>
<td></td>
</tr>
<tr>
<td>6. A14712</td>
<td>71 M</td>
<td>Mild respiratory infection for several days.</td>
<td>Right</td>
<td>24 hours</td>
<td>Excellent immediate results.</td>
<td></td>
</tr>
<tr>
<td>7. A14951</td>
<td>70 M</td>
<td>Chronic illness and prolonged bedrest.</td>
<td>Right</td>
<td>3 days</td>
<td>Good immediate result.</td>
<td></td>
</tr>
<tr>
<td>8. 33-73-22</td>
<td>76 F</td>
<td>No prior illness or injury, apparently spontaneous onset.</td>
<td>Left</td>
<td>10 hours</td>
<td>Excellent early result.</td>
<td></td>
</tr>
</tbody>
</table>
| 9. 25-96-41 | 42 M | Duodenal ulcer, pneumonitis, (? pulmonary embolus) prolonged bedrest. | Right | Died about three hours after onset of pulmonary embolus. | Died about three hours after onset of pulmonary embolus. | }

**TABLE 1**

Summary of Cases of Iliofemoral Venous Thrombosis

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Although iliofemoral venous thrombosis is frequently confused clinically with arterial occlusion, the differences between the two ordinarily permit accurate diagnosis. Marked swelling of the entire extremity with pain, and usually discoloration, are indications of venous obstruction, and the combination does not occur with primary arterial disease. Distended superficial veins and femoral tenderness are usually present in venous thrombosis. There is little necessity for venography in the acute clinical situation. The non-operative treatment of massive venous thrombosis consists of efforts to improve venous collateral drainage by elevation of the extremity, elastic compression, and lumbar sympathetic block as well as efforts to prevent extension of thrombosis by anticoagulant therapy. In 1954 Mahorner and in 1957 Mahorner and Fontaine advocated direct thrombectomy of the involved veins and presented an encouraging clinical experience. According to DeWeese, the procedure was first reported by Lawton in 1938. Subsequent reports have been slow in appearing, though interest appears to be increasing at the present time. The dramatic relief of pain and discoloration and rapid subsidence of swelling, described by all authors, and noted in the series of cases reported herein, are adequate reasons for advocating operative treatment of this process. Post-operative phlebograms, reported by Mahorner and Haller, have demonstrated apparently functioning valves in the lower extremities of patients who have had massive iliofemoral venous thrombectomy, perhaps an even more important reason for considering thrombectomy as the treatment of choice for iliofemoral thrombosis.

Operative treatment is performed as an emergency utilizing local anesthesia. A short groin incision is made and deepened to expose the femoral vein. The edema encountered is not troublesome and the operation is usually simple. After exposure of the common femoral vein, tapes are placed about the common, superficial, and deep femoral veins to control venous bleeding, and an incision in the common femoral vein made in a longitudinal fashion. The proximal thrombus is extruded or removed using suction and enlisting the patient's cooperation in strain-

The series of patients reported in this communication require little comment. In the first patient shock and death occurred, almost certainly a result of fluid loss into the involved extremity. Although attempts were made to replace blood volume, the patient's general condition deteriorated rapidly and she was never considered a reasonable operative risk. Operative treatment was uncomplicated in all patients in whom operation was carried out and blood transfusions were not required. The immediate and early results have been good but no post-operative phlebograms have been performed at the time of this report. The patients will be followed carefully, as demonstration that operation prevents the post-phlebitic syndrome may well be the strongest point in its favor. Patient nine demonstrates the hazard of venous thrombosis and the necessity for prompt and adequate surgical care of these patients.

SUMMARY AND CONCLUSIONS

1. Nine patients with massive thrombosis of the iliac and femoral veins have been recognized in the past three years at the University of Oklahoma Medical Center.

2. Iliofemoral thrombectomy has been a simple procedure in seven patients and the early results are satisfactory.
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3. Death occurred in two patients, one due to shock and the other to pulmonary embolism before iliofemoral thrombectomy could be carried out.

4. Immediate thrombectomy should be considered in every case of massive iliofemoral venous thrombosis and almost certainly represents an important advance in the treatment of this condition.

REFERENCES

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HOSPITALS ASKED TO DISCONTINUE PROFESSIONAL DISCOUNTS

The Board of Trustees of the Oklahoma Hospital Association recommended on February 12, 1964, that member hospitals discontinue the practice of granting professional discounts. Since the policy will affect physicians and their families, if adopted by state hospitals, it is reprinted below:

"Hospitals have historically granted courtesy discounts to certain categories of individuals and groups. Originally, there was probably justification for these discounts; however, through the years, most of these circumstances have changed.

"The Board of Trustees of the Oklahoma Hospital Association, Inc., believes that the discounting of hospital bills to those who can pay is contrary to the non-profit concept of the community hospital. The board further believes that the practice of giving courtesy discounts tends to have the following effects:

1. It increases the cost of care to all segments of patients, thereby increasing the burden on all others.

2. It jeopardizes the tax exempt status of a non-profit hospital.

3. It adversely affects the hospital's public relations. The public cannot understand courtesy discounts to any group or individual when discounts are based on other than economic need.

4. It discourages those discounted from purchasing hospitalization insurance.

"Therefore, the Board of Trustees of the Oklahoma Hospital Association, Inc., does recommend that each Member Institution of the Association critically review its own discount policies, with a view toward the total elimination of all courtesy discounts.

"This statement is not intended to apply to discounts to employees; however, employee discounts as a "fringe benefit" in lieu of compensable salary should be carefully weighed as to the equity to all employees. The hospital may prefer to purchase Blue Cross coverage or commercial hospitalization insurance coverage for its employees instead of allowing a discount."